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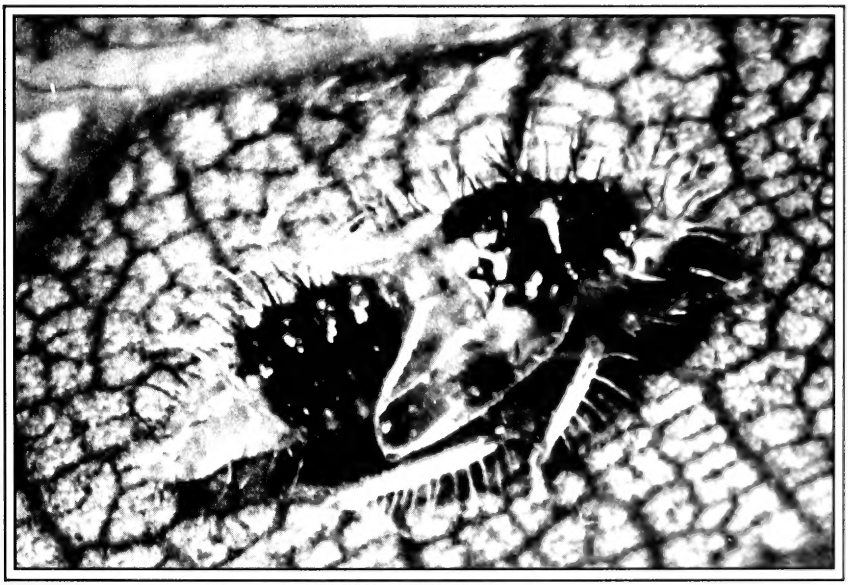

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Cover illustration: *Aguriahana stellulata* nymph (Hemiptera: Cicadellidae)
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RHYZOBIUS CHRYSOMELOIDES (HERBST) (COLEOPTERA: COCCINELLIDAE) NEW TO BRITAIN

ROGER D. HAWKINS

30D, Meadowcroft Close, Horley, Surrey RH6 9EL

Abstract. The small European coccinellid beetle *Rhyzobius chrysomeloides* (Herbst), not previously known in Britain, has been found in Surrey (VC 17) at two localities. Comparison is made with the common British species *Rhyzobius litura* (Fab.).

INTRODUCTION

The banks of motorways are often considered to be the equivalent of a nature reserve but few people have either the opportunity or the inclination to examine their flora and fauna since they are subject to extremes of noise and pollution, while unauthorised access is officially discouraged. An exception to this occurs near the village of Nutfield in east Surrey where the M23 motorway bursts through the Greensand ridge in a deep cutting and crosses the valley to the north on an embankment before ascending the chalk hills of the North Downs. There is a solid fence at the top of this embankment, probably to contain the noise of traffic, so access to the slopes is possible.

About one kilometre to the north-east of Nutfield, at grid reference TQ312516, a track passes under the motorway to connect Lake Farm on the east side with some cottages and fields to the west. This track is also a public footpath and on 26.iv.1996 I came along this path while routinely recording ladybirds (Coccinellidae) and other insects for a series of local atlases. A group of young pine trees (*Pinus sylvestris* L.) had been planted on the west bank of the motorway and were then about four metres high. From one of these pines I beat a small orange-brown coccinellid which I assumed to be *Scymnus suturalis* Thunberg, a species found commonly on pine. As is advisable with these tiny beetles, I took the specimen home for checking but, on mounting it, I realised that it was a larger insect than the *Scymnus*, with longer antennae, and was clearly a specimen of *Rhyzobius*.

About a year later I tried to name the specimen using the key by Fürsch (1967) to the Coccinellidae of central Europe. It appeared to be *Rhyzobius chrysomeloides* (Herbst), a widespread species on the European mainland that had not previously been recorded from the British Isles. The external differences between this species and our common *R. litura* (Fab.) are slight and it is advisable to check the male genitalia. At that time I had no experience of dissecting such a tiny beetle and a tentative probe produced only a minute piece of gut which caused me to think it was a female. The specimen was then taken to Dr R. G. Booth who pronounced that it was in fact a male, dissected it immediately and confirmed that it was indeed *R. chrysomeloides*.

COMPARISON WITH *RHYZOBIUS LITURA*

The differences between these two species are illustrated by Fürsch (1967). The sides of the pronotum of *litura* taper from the base, and increasingly towards the front, while the pronotal edges of *chrysomeloides* are almost parallel-sided over the basal quarter (Fig. 1). The prosternal carinae (between the fore coxae) of *litura* taper gradually from rear to front, while in *chrysomeloides* the tapering is interrupted by a parallel-sided central section and the apex is broader (Fig. 2).

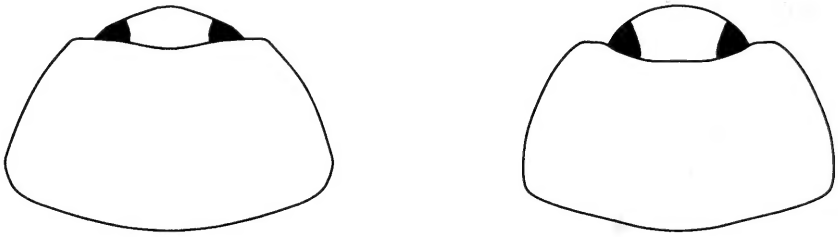

Fig. 1. Outline of pronotum. a. *R. litura*. b. *R. chrysomeloides*.

However, there is often some individual variation in this character, so it may not always be as clear-cut as the illustrations suggest. The colour of *litura* is usually pale orange-brown, often with a U-shaped dark mark, although darker individuals can also occur. The background colour of *chrysomeloides* is somewhat darker and the dark marks are more strongly developed, sometimes with additional spots inside the U-shaped mark. Fürsch states that *litura* is shortly oval and somewhat arched, while *chrysomeloides* is more elongate and flatter.

The above differences are comparative and slight but the male genitalia are quite distinct (Fig. 3). In *chrysomeloides*, the median lobe is more slender, elongate and parallel-sided, and is distinctly longer than the pair of parameres, while in *litura*, the median lobe is much shorter and stouter, and not longer than the parameres. The median lobe of *litura* also has a strong protruberant prong on its dorsal face, between the parameres, which is lacking in *chrysomeloides*. This prong is clearly visible when the genital capsule is viewed from the side. Fürsch also illustrates differences in the genital plates of the females, in that the coxites are more slender and elongate in *chrysomeloides* than they are in *litura*.

Comment

The presence of the first British specimen of *R. chrysomeloides* on a motorway bank brings to mind the delightful possibility that it might, quite literally, have fallen off the back of a lorry. At present about one million lorries and over five million

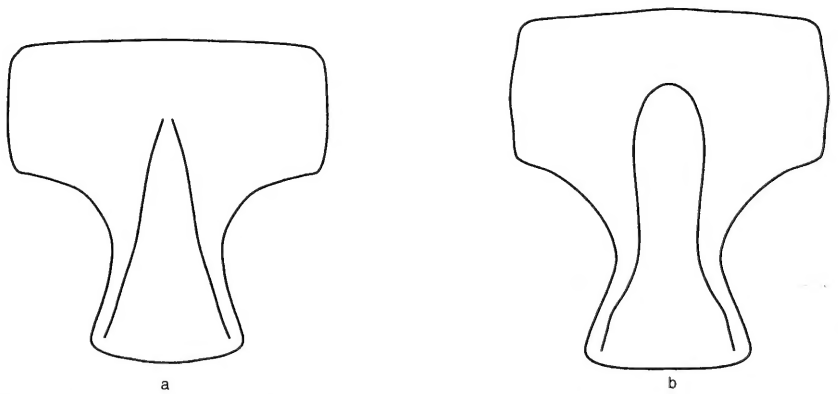

Fig. 2. Prosternal carinae. a. *R. litura*. b. *R. chrysomeloides*. (after Bielawski, 1959)

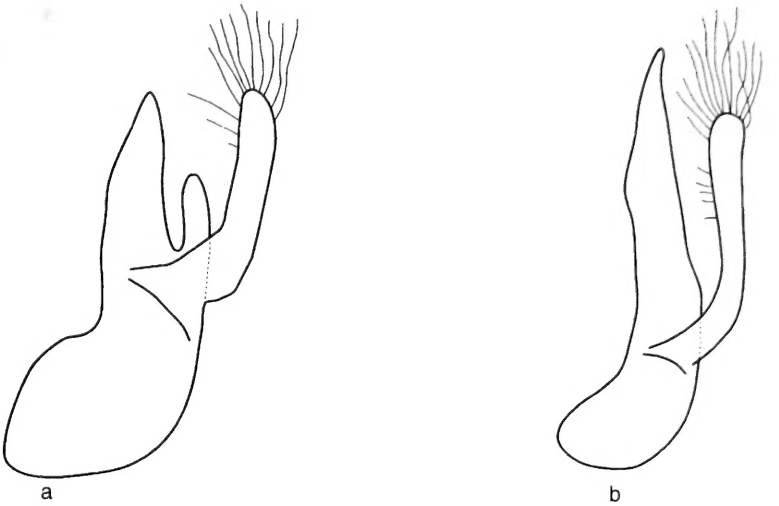

Fig. 3. Male genitalia (part). a. *R. litura*. b. *R. chrysomeloides*. (after Bielawski, 1959)

private cars travel from mainland Europe to Britain each year (source: Eurotunnel annual report, 1998). The chance of importing individual insects is clearly high but it is nevertheless doubtful whether enough specimens could come in to found a breeding colony. A more probable means of importation would be with young trees imported from Continental nurseries.

The chance of this specimen being a primary immigrant is low—for an example to be discovered by casual beating it is more likely that colonies already exist. I have not been able to return to the site of the discovery with sufficient spare time to make a further search, but during the last three years I have dissected over 300 specimens of *Rhyzobius* swept from its usual grassland habitat and confirmed that all the males were *litura*. Meanwhile it is recommended that all specimens of *Rhyzobius* are examined carefully, particularly if they have more extensive dark marks than usual, or are beaten from trees or bushes, since Fürsch (1967) noted that *chrysomeloides* was found especially on pine trees and bushes, often near water. Indeed, as this note was being prepared, a thriving colony of *R. chrysomeloides* was subsequently discovered in West Molesey, Surrey (Menzies, 1999 and pers. comm.).

Acknowledgements

Thanks are due to Graham Collins for tidying up my lop-sided drawings. I am also grateful to Roger Booth (CABI Bioscience) for convincing me that the specimen was a male and for performing the rather intricate dissection needed to confirm its identity. The specimen has been presented to the Natural History Museum.

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SHORT COMMUNICATION

Hoverfly (Syrphidae) records from North Uist and the Monach Islands, Scotland—July 1999—North Uist (57°.35′ N, 7°.15′ W), surface area of 341 km^2, and the five Monach Islands (57°.30′ N, 7°.40′ W), total area of 3.5 km^2, are flat and largely treeless islands that lie in the Atlantic Ocean off the west coast of Scotland. Together with the other Outer Hebrides, these islands are relatively 'unexplored' for hoverflies (Whiteley, 1994; Stubbs & Falk, 1993). During a week of uncharacteristically hot and dry weather in North Uist (24–30.vii.1999) and a visit to Ceann Ear, the largest of the Monach Islands, on 31.vii.1999, we observed the following sixteen hoverfly species on North Uist, one of which, *Platycheirus manicatus*, occurred also on the Monach Islands.

The low hoverfly abundance and diversity we observed probably reflects the relatively small size and geographical location of the islands, and the region's usual wet and windy weather conditions. However, collecting was not exhaustive or systematic, and concentrated largely on the northern half of North Uist. The greatest abundance of species was observed in the sand dunes and flower-rich machair at Solas, Newton, Balranald and Clachan Shanda. In the last of these locations, two male corncrakes (*Crex crex* (L.)) were calling. Unless otherwise stated, all the species listed below were seen in these habitat types. In addition, on passing through Skye to reach North Uist, we found *Eristalis pertinax* (Scop.) on a roadside verge at Broadford.

Melanostoma mellinum (L.) and *Melanostoma scalare* (Fab.): both *Melanostoma* species were found only in *Eriophorum vaginatum*-rich moorland near Weaver's Point, Lochmaddy. *Platycheirus albimanus* (Fab.): machair on North Uist and present also on a roadside verge at Broadford, Skye. *Platycheirus clypeatus* (Meigen); *Platycheirus manicatus* (Meigen): common on North Uist and the only species observed from Ceann Ear (Monach Islands), where it was widespread in the machair. *Metasyrphus corollae* (Fab.); *Sphaerophoria* sp.?: females only found within *Eriophorum vaginatum*-rich moorland near Weaver's Point, Lochmaddy. *Syrphus vitripennis* Meigen; *Cheilosia illustrata* (Harris); *Cheilosia latrifons* (Zett.); *Rhingia campestris* Meigen; *Lejogaster metallina* (Fab.); *Eristalis abusivus* Collin; *Eristalis intricarius* (L.); *Helophilus pendulus* (L.); *Sericomyia silentis* (Harris): in *Eriophorum vaginatum*-rich moorland near Weaver's Point, Lochmaddy and boggy moorland at Newton, as well as hill-topping on Ben Mor c. 190 m above sea level. However, the *S. silentis* specimens collected in North Uist had white-yellow abdominal bars (tergites 2–4) which were more similar to those of *Sericomyia lappona* (L.) as illustrated in Stubbs & Falk (1993, p. 107; plate 8), and *S. lappona* specimens in the collection of the Natural History Museum, London. The scutellum in *S. silentis* (North Uist specimens) is almost black, while in *S. lappona* (museum specimens) it is reddish. This may be a more reliable aid to identification than the colour of the tergite bars.

We thank Edward Wake, Katherine Wake and Susie Gibbs for their assistance with this study; Niall Johnson (The Uist Outdoor Centre) for taking us to the Monach Islands in *Sea Fury*, and Nigel Wyatt (The Natural History Museum, London) for confirming our hoverfly species determination.—ANGUS MCCULLOCH, 57 Endell Street, London WC2H 9AJ & ANDREW WAKEHAM-DAWSON, DETR, Floor 3/H11, Ashdown House, 123 Victoria Street, London SW1E 6DE

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PSEUDOCOLLINELLA JORLII (CARLES-TOLRÁ) (DIPTERA: SPHAEROCERIDAE) NEW TO BRITAIN, AND NEW RECORDS OF SPHAEROCERIDAE FROM KENFIG NATIONAL NATURE RESERVE, GLAMORGAN

P. GATT

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Abstract. Eleven species of lesser dung flies (Diptera: Sphaeroceridae) are newly recorded from Kenfig National Nature Reserve, Glamorgan. Of these, *Pseudocollinella jorlii* (Carles-Tolrá) is new to Britain, *Phthitia plumosula* (Rondani) is uncommon, and *Telomerina pseudoleucoptera* (Duda) is rare. This increases the total number of species of Sphaeroceridae known from Kenfig from 26 to 37. Further collecting and trapping at this faunistically rich site may reveal more species.

INTRODUCTION

The dipterous fauna of Kenfig National Nature Reserve, Glamorgan, has been extensively studied and a detailed report given by Deeming (1995). It is therefore of interest to add a further 11 species of Sphaeroceridae (all in the subfamily Limosininae) to the 26 already known from Kenfig. One of these species, *Pseudocollinella jorlii* (Carles-Tolrá) was previously unknown from Britain.

All specimens were collected by myself during a visit to the site on 10.vii.1995. Representative material has been deposited in the National Museum of Wales, Cardiff.

PSEUDOCOLLINELLA JORLII (CARLES-TOLRÁ)

The genus *Pseudocollinella* Duda, 1924, is a Holarctic genus comprising 19 species, 5 of which occur in the Palaearctic Region. Until recently, it has been treated as part of *Opacifrons* Duda (Marshall & Smith, 1993).

Five species groups have been defined within the genus. *P. jorlii*, and the very closely related *P. humida* (Haliday) constitute the Palaearctic *humida* group.

P. humida is a common, hygrophilous species widely distributed in the Palaearctic Region. It is also widely distributed in Britain, where it has been collected from beside ponds and streams, amongst vegetation or on dried-up river beds and on marshes (Pitkin, 1988). Deeming (1995) has recorded a single specimen from Kenfig and I have collected a series of 3 males and 6 females from the mud around Kenfig Pool.

P. jorlii was first described from Spain (Carles-Tolrá, 1990) as *Opacifrons jorlii* and has subsequently also been recorded from Portugal, Italy, Morocco, Algeria and, more recently, from Malta (Gatt, in litt.). Its distribution, although probably wide, cannot be stated with certainty as it has previously been confused with *humida*. I have collected a single female from the area around Kenfig Pool. The occurrence of *P. jorlii* in Britain was hitherto unknown.

P. jorlii can be distinguished from the very similar *humida* by differences in the male and female post-abdominal structures, figured in outline by Carles-Tolrá (1990). The female 10th sternite (hypoproct, subanal plate), referred to as sternite 9 by Carles-Tolrá but now deemed to be sternite 10, is markedly different in both species, and is here refigured with detail for both. In *jorlii*, the 10th sternite in strict ventral view is horse-shoe shaped with a large, pyriform, anteromedial, desclerotised and depigmented area (Fig. 1a). In specimens which have been overcleared this area

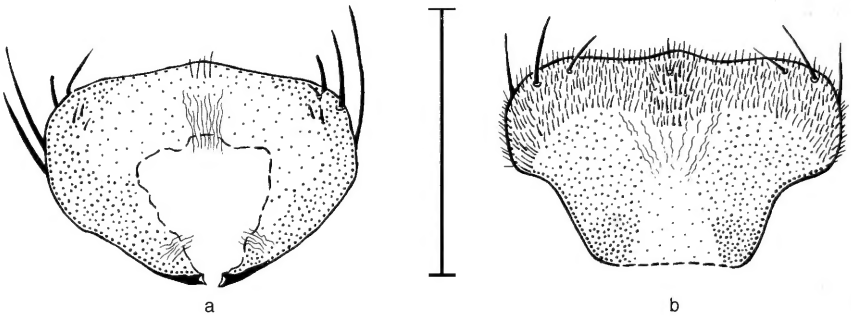

Figure 1. *Pseudocollinella* Duda. Female sternite 10 (hypoproct, subanal plate) in strict ventral view: a, *jorlii*; b, *humida*.

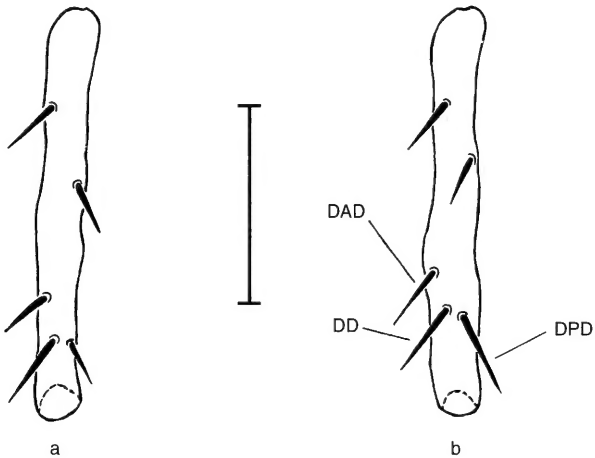

Figure 2. *Pseudocollinella* Duda. Female mid-tibia, dorsal view: a, *jorlii*; b, *humida*. Abbreviations: DAD = distal anterodorsal bristle, DD = distal dorsal bristle, DPD = distal posterodorsal bristle. Scale bars: sternites 0.21 mm, tibiae 0.3 mm.

may be so pale as to be completely transparent, and it will then take the semblance of a pyriform excision. Two highly sclerotised spine-like thickenings of the anteromedial margin of the sternite flank its apex. In *humida*, the 10th sternite is roughly quadrangular in shape with a highly setulose posterior third, a finely rugose central part and a paler triangular anteromedial zone (Fig. 1b). Spine-like thickenings are completely absent.

The 3 dorsal bristles that occur on the distal part of the middle tibia of both species also provide useful distinguishing characters. For the sake of clarity, I have adopted the terminology used by Marshall & Smith (1993) to describe the position of these 3 important bristles: distal anterodorsal (DAD), distal dorsal (DD), and distal posterodorsal (DPD). In *jorlii*, the DPD is weak and short, about half the length of

the DD and more or less the same length as the DAD (Fig. 2a). By contrast, the DPD in *humida* is strong and long, about the same length as the DD and longer than the DAD (Fig. 2b). These differences are apparent in the figures given by Carles-Tolrá (1990). His descriptions of the mid-tibial chaetotaxy, however, are not completely clear, and may have led to a small error in couplet 4 of Marshall & Smith's (1993) key to the known species of *Pseudocollinella*. The key can be rectified as follows:

4. Distal posterodorsal bristle of midtibia shorter than distal *dorsal* (not distal anterodorsal) bristle. Paramere U-shaped . . . . . *jorlii* (Carles-Tolrá). Europe.

   Distal posterodorsal bristle of midtibia as long as distal *dorsal* (not anterodorsal) bristle. Paramere straight . . . . . *humida* (Haliday). Palaearctic.

The biology of this species is not known. The type series was, however, collected from marshes, pools, river banks, a dead tadpole and a cave. These and other data suggest that it is a hygrophilous species with larvae developing in mud as do those of *P. humida*.

P. jorlii, misidentified as *humida* may well be represented in several European collections (Munari, 1992). Likewise, search amongst specimens identified as *humida* in British collections may unearth further specimens of *jorlii*.

Other new records

These are given with the species listed in alphabetical order. Notes on the biology and geographical distribution of each species are given.

Chaetopodella scutellaris (Haliday)

Predominantly a pasture symbovilous species, *C. scutellaris* has also been recorded from human faeces as well as from carrion. It is widespread in Europe, and there are records from Africa and Afghanistan. Five males and 5 females were collected from fresh cow dung at Kenfig.

Coproica acutangula (Zetterstedt)

A coprophagous species recorded from the dung of cow, horse, sheep, pig, dog and man. Cosmopolitan. Forty-seven males and 38 females were collected from cow dung mixed with mud at the edge of Kenfig Pool.

Coproica ferruginata (Stenhammar)

A symbovilous, coprophagous species, secondarily synanthropic in farming communities. Cosmopolitan. One female was collected from fresh cow dung.

Coproica lugubris (Haliday)

A coprophagous species widely distributed in Europe and east to Afghanistan and Korea, and also recorded from North Africa (Tunisia). Eleven males and 6 females were collected from fresh cow dung.

Coproica pusio (Zetterstedt)

A coprophagous species found on the dung of horse and pig, but also recorded from rotting vegetation (Pitkin, 1988). Widely distributed in Europe and east to Afghanistan and Mongolia. Two females were collected from fresh cow dung.

Leptocera (Leptocera) caenosa (Rondani)

A eusynanthropic, polysaprophagous species which is only rarely collected out of doors, and then usually in caves or on carrion (Roháček, pers. comm.). It is often collected on windows and readily breeds in human sewage. Cosmopolitan. One female was collected at Kenfig.

Leptocera (Leptocera) nigra Olivier

The larvae of *L. nigra* develop in mud or wet soil and adults are to be found in damp, grassy biotopes and alongside streams and ponds. Adults may also be found on dung. Possibly confined to temperate areas of the entire Palaearctic Region, where it is extremely common in the south, especially the Mediterranean (Roháček, 1982). Also confirmed from the Afrotropical Region (Roháček, pers. comm.). Three females were taken from the area around Kenfig Pool.

Leptocera (Rachispoda) limosa (Fallén)

Usually found on damp ground at the edge of ponds, streams and marshes, but has also been collected from dung. A Holarctic species, widely distributed in Europe and east to Afghanistan, also recorded from North Africa. Twenty-seven males and 30 females were collected from wet mud at Kenfig Pool.

Phthitia (Kimosina) plumosula (Rondani)

Generally uncommon, this species usually occurs in damp shady biotopes such as woodland meadows and streams, and under decaying vegetation. It has also been taken from caves, and from windows. Widely distributed in Europe, *P. plumosula* probably has its origin in eastern North America from where it has subsequently been introduced to Europe and Chile (Marshall & Smith, 1992). This species is not usually taken from dung. Some of the 8 males and 6 females taken at Kenfig, were, however, collected from fresh cow dung.

Telomerina pseudoleucoptera (Duda)

An uncommon species which is associated with the dung of large herbivores. Known only from Europe, where it is widespread, it is rarely collected (Marshall & Roháček, 1984). One female was taken from fresh cow dung at Kenfig.

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I wish to thank Dr John C. Deeming (Cardiff, UK) and Dr Martin Ebejer (Balzan, Malta) for reading drafts of the manuscript and suggesting improvements. Dr Deeming is also thanked for organising the trip to Kenfig, and for his assistance and

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SHORT COMMUNICATION

Behavioural observations of *Philanthus triangulum* (Fab.) (Hymenoptera).—*Philanthus triangulum* (Fab.), the European bee wolf, is a species of solitary wasp found throughout Western Europe. Over the past 7–8 years it has been undergoing a population resurgence after a period of reduced numbers. A newly established colony of *P. triangulum* was discovered in the grounds of St Peter's Hospital, Chertsey, Surrey. This colony had probably only been present for one to three years before the date of discovery (June 1996). The colony was observed to establish on the same site over the next two years and in 1998 a new colony was observed in a separate location approximately 150 metres from the first. Due to its small size (10–20 individuals) this probably established in 1998, possibly as an offshoot of the first colony.

The first colony was the focus of a short period of field study during the summer of 1998. During the period of study, on several occasions (4–5) two wasps were observed using one nest entrance. Each wasp would open the entrance itself (i.e. clear the plug of soil put in place to prevent parasitism), and close the entrance after it. The wasps would remain in the nest burrow together and then leave separately. There was no evidence of aggression, as was sometimes seen when one female entered another's nest in order to plunder paralysed worker bees from the nest.

There are several possible explanations for this behaviour. The females could have been sharing nest entrances, but have had separate nest burrows underground. This is the most likely explanation, as many other species of solitary wasp show this behaviour. The nest sharing could have been accidental, due to misidentification of nest sites. This was observed occurring at several different burrows so this is less likely. Alternatively the females could have been exhibiting some degree of social behaviour. No papers so far found have described any of these behaviours for *P. triangulum*. Whichever is true this novel behaviour is worthy of extra study.—Jason Moore, Selwyn College, Cambridge CB3 9DQ.

SHORT COMMUNICATION

Notes on the Irish *Megastigmus* (Hymenoptera: Torymidae) including two species new to Ireland.—The authors are aware of only three species of *Megastigmus* on the Irish list. These are *M. pictus* (Förster), *M. pinus* Parfitt and *M. suspectus* Borries (Bouček, 1970; O'Connor & O'Connor, 1984). From work on material housed in the National Museum of Ireland, it is now possible to add another two species to the Irish list *viz. M. dorsalis* (Fab.) and *M. spermotrophus* Wachtl and to report a second Irish record of *M. pictus*. Most of the specimens are from the A. W. Stelfox Collection and were returned to the National Museum of Ireland by the Smithsonian Institution in 1985 (Beirne, 1985). These had been identified by the late M. W. R. de V. Graham who also determined the Oaklands specimen of *M. dorsalis*. In case of any possible labelling errors made by the senior author while transferring the Stelfox material between the two museums, these specimens and the others cited in this paper have all been redetermined using Bouček (*op. cit.*). Unless otherwise stated, distribution and host data are from Noyes (1998).

New records

Megastigmus dorsalis (Fab.) New to Ireland
TIPPERARY: ♀, Ballinacourty (R8630), 15.ix.1943, A. W. Stelfox; WEXFORD: ♂, Oaklands (S7125), 18.vi.1982, J. P. & M. A. O'Connor; WICKLOW: Clara (T1792), 4.ix.1938, A. W. Stelfox.

This species is also known from Britain, France, Germany, Hungary, Italy, Sweden, the former U.S.S.R. and India. It is a hyperparasitoid in cynipid galls on oak *Quercus*.

Megastigmus spermotrophus Wachtl New to Ireland
DOWN: ♂, Donard Lodge (J3629), 16.v.1957, "ex Douglas Fir cones", A. W. Stelfox; DUBLIN: ♀, Glenasmole (O1019), 17.vi.1942, A. W. Stelfox; WICKLOW: ♀4♂♂, Powerscourt (O2116), 29.iv.1921, "from the cones of the Douglas Fir", J. G. Reinhart.

This species is also known from Austria, Britain, Czechoslovakia, Denmark, Finland, France, Germany, Poland, the former U.S.S.R., New Zealand and North America. It is a seed feeder on *Abies* and *Pseudotsuga* especially *P. menziesii*.

Megastigmus pictus (Förster) Second Irish record
DUBLIN: ♀, Lucan (O0335), 28.vi.1944, A. W. Stelfox.

This species was previously reported from Knickeen, Co. Wicklow (Bouček, *op. cit.*). *M. pictus* is also known from Britain, Germany, Poland, Sweden, The Netherlands, the former U.S.S.R. and China. It is a seed feeder on *Larix*.

The senior author is very grateful to the late M. W. R. de V. Graham for identifying specimens and to M. A. O'Connor for her help during field-work.—J. P. O'Connor, National Museum of Ireland, Kildare Street, Dublin 2, Republic of Ireland; R. Nash, Ulster Museum, Botanic Gardens, Belfast BT9 5AB, Northern Ireland.

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THE NYMPHAL STAGES OF THE FIELD GRASSHOPPER, *CHORTHIPPUS BRUNNEUS* (THUNBERG) (ORTHOPTERA: ACRIDIDAE)

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Abstract. Hind-femora measurements of the Field Grasshopper, *Chorthippus brunneus* (Thunberg), collected at all stages of development from three sites in the Croydon area, showed that most females had five nymphal stages, while a small proportion at two of the sites passed through only four. A simple correlation found between antennal segmentation and numerical stage for nymphs of known developmental history provided an independent means of assigning a number to a nymphal stage when background details were lacking, and permitted assessment of the nymphal histories of adults. These findings are discussed against a background of the four-stage nymphal histories apparently widely found for females of this species reared in captivity.

INTRODUCTION

Captive rearing of small numbers of nymphal grasshoppers found hatching on Constitution Hill, Aberystwyth, Dyfed, in 1941, although far from successful, showed reversal of the wing-rudiments for females of *C. brunneus* occurring at the third moult, while the only female to reach the adult state passed through five nymphal stages. Similar small-scale trials at Aberystwyth in the following years on nymphs both taken in the field and hatched in captivity confirmed a five-stage nymphal development for females, as opposed to the four-stage sequence found for males of this species and for both sexes of *C. parallelus* (Zett.). Further rearing trials in 1949 on *C. brunneus* collected as first-stage nymphs from Mitcham Common, Surrey (now London Borough of Merton), led to similar results so that, although numbers involved were still low, there seemed no reason to doubt that a five-stage nymphal sequence was normal for females of this species.

The publication by Richards & Waloff (1954) of the results of their intensive study of British grasshoppers gave widespread currency to their view that both sexes of *C. brunneus* had four nymphal instars, and called into question the validity of the above conclusion. The possibility that a different developmental pattern prevailed under more natural conditions had to be considered, and a study devised that would minimise any spurious effects of captive rearing. Individual nymphs cannot readily be monitored in the field, while the statistical study of wild populations is beset with difficulties and uncertainties. The compromise adopted was to collect nymphs at all stages of development; to measure their hind-femora, count the antennal segments, note the aspect of the wing-rudiments and external female genitalia; and to retain each nymph until it had completed at least one moult, so that these features could be assessed for the next instar and thus compared with those observed in the field.

Reversal of the wing-rudiments, with the costal margins becoming directed upwards towards the mid-dorsal line and the hindwings overlapping the forewings while presenting the undersurface to the exterior, normally marks the onset of the penultimate nymphal stage (Uvarov, 1966); no exception to this was encountered in the present study. In *C. brunneus* the reversed hindwing rudiments reach to the rear end of the first abdominal tergite in the penultimate, and to the rear end of the third

in the final nymphal stage. Thus for an individual having a total of N nymphal stages the last two can be recognised by this character alone and denoted as stages N-1 and N even though the numerical value of N may be unknown.

Although not forming part of the study as originally planned, a further rearing trial on nymphs hatched in captivity was undertaken to supplement the information obtained from this.

Sites studied

A. South Croydon: An area where, a few years previously, topsoil had been replaced over tipped domestic refuse, and the vegetation allowed to regenerate naturally. Here *C. brunneus* was clearly dominant, although occasional specimens of *C. parallelus* occurred, probably as vagrants from nearby established grassland.
B. South Croydon: Disused railway sidings and adjacent abandoned allotments. *C. brunneus* was the only grasshopper found.
C. Mitcham Common, London Borough of Merton: A mosaic of grassland types, where *C. parallelus* was more conspicuous than *C. brunneus*, while other species of grasshopper were also present.

Experimental

Site A

In 1969, 41 male and 52 female nymphs were collected, of which 22 and 31 respectively were retained for at least one moult. These were housed singly in 1-lb jam-jars, the metal closures of which were lodged in place without being screwed home. Grass cut from an untreated and unmown garden plot was supplied for food, and the jars thoroughly cleaned, every two days. The jars were kept at ambient indoor temperature, placed in the sun for an hour or so each day, but given no artificial irradiation. Humidity was probably higher than desirable, some beads of condensed moisture usually being present in the upper parts of the jars. For the final stage the nymphs were transferred singly to 2-lb jars with loose-fitting metal covers; these provided somewhat less humid conditions. All nymphal casts were retained as physical evidence of moulting.

The lengths of the hind-femora were recorded upon capture and after each moult. The insects were immobilised by being placed for a few minutes in the freezing compartment of a domestic refrigerator, and measurements made by direct comparison with a glass scale engraved in millimetres and tenths, laid above and in contact with the femur and viewed at $\times 16$ with a stereomicroscope. Measurements of hind-femora detached from nymphs that died indicated that this procedure was sound. Furthermore, measurements of the hind-femora of nymphal casts, if detached without damage to the basal end, were identical with live measurements in 67 comparisons, 0.1 mm different in 53, and 0.2 mm different in 9, the larger differences being confined to the later stages. In no instance did the discrepancy exceed 4% and occasionally a cast measurement was used when a moult occurred before a live measurement could be made.

The stage at which wing-reversal occurred was noted, and nymphs with reversed wings identified with stages N-1 or N. Some counts of antennal segments were made during life, but a much more detailed study of the antennal sheaths detached from the retained casts was made later. Many complete sequences of the latter were prepared for microscopic examination (Collins, 1988) to determine the pattern of

growth, and the agreement between their segmentation and that recorded for the corresponding live instar established. A few rough sketches were made of the developing female genitalia, but other features such as ratios of head to pronotal lengths, and details of the fastigial foveolae, tympanal grooves and wing-lobes before reversal, although changing progressively during nymphal development, proved unhelpful in the present context and were not pursued further.

Certain aspects of the results obtained in 1969 highlighted a need for further investigation and the exercise was repeated, with some modifications, in 1970. Attention was concentrated on female nymphs, 87 of which were collected and 63 retained for at least one moult. Because of the possibly adverse effects of freezing, nymphs were immobilised for measurement by gentle compression from above by the bottom of a plastic Petri dish, on which the glass scale was laid, against a film of thin rubber stretched like a drumhead over a cavity below. Provided that at least two days elapsed before moulted nymphs were thus treated, no harm resulted. As before, hind-femora measurements of nymphal casts, or of the corpses of the few that died, were occasionally used when a gap occurred in the data for live nymphs. More attention was directed to the antennae of living nymphs; counts of the flagellar segments were recorded for at least one stage of almost every individual, and confirmed for a few casts.

Sites B and C

During both 1973 and 1975 the approach of 1970 was applied to a total of 41 females from site B and 11 from site C. Counts of the antennal segments were confined to the later stages of one apparently aberrant individual from site B in 1973 and another from this site in 1975. Some sketches were made of the developing external genitalia, particularly those of the second instar.

Results

Site A, 1969

The measurements of the hind femora have been plotted as histograms in Figs 1 and 2. The data for males fall into four discrete clusters, the last two of which are identified by wing character with stages N-1 and N. The progress of nymphal development is indicated by the diagonal relationship between the clusters, individuals represented in any cluster in series b to d having contributed, at one stage earlier, to the cluster one position to the left in the series immediately above. This reveals that, of 18 males taken in the first stage, 12 reached the second, 10 the third and 10 the final fourth nymphal stage. Captive rearing has had little effect on the dimensions, and the vertical correspondence between the clusters indicates that nymphs taken in the field exhibited the same four stages.

In contrast, the data for females fall into five somewhat diffuse clusters. Rearing histories showed that of the 18 nymphs taken in the first stage, two developed differently from the others, wing-reversal occurring at the second moult and full nymphal development being completed in four stages. The blocks representing these two are shown solid. A third wild nymph with hind-femora 4.1 mm long showed wing-reversal at the next moult and became adult after a further two, while two others (hind-femora 5.5 and 6.0 mm) had reversed wing-buds when captured and reached the adult state after two moults. Antennal segmentation (see below) provided strong evidence that these three were also four-stage types, and the blocks

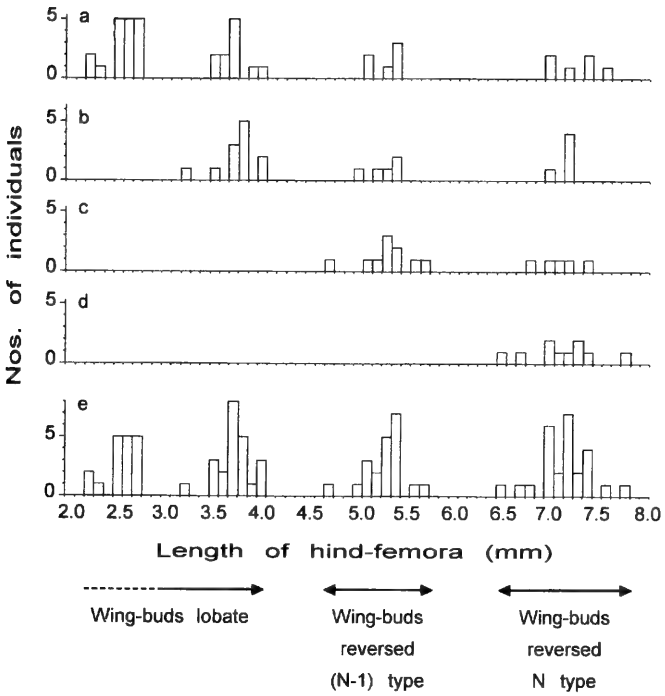

Fig. 1. *C. brunneus*. Hind-femora lengths of male nymphs, Site A, 1969: a—on capture, b—after 1, c—after 2, d—after 3 moults in captivity, e—totals of a–d combined.

displaying their development are shaded. If the contribution to the histograms of these five individuals is disregarded the clustering of the data for the remainder is much closer. The diagonal relationship already described shows that, of the 16 remaining nymphs taken in the first stage, 10 completed development in five nymphal stages, while one more may be accepted as being in this category by having N-1 type wing-buds after the third moult. Counts of the antennal segments recorded for some or all of the known nymphal stages of these 11 (Table 1) were compared with those for field specimens with incomplete rearing histories. Five individuals from the second cluster, six from the third and two from the fourth, for which this was possible, had counts that confirmed the numerical agreement between stage upon capture and position of the cluster. The predominance of a five-stage nymphal history implied by the vertical correspondence between the clusters thus received substantial independent support.

Site A, 1970

All hind femora measurements combined have been plotted as histograms in Fig. 3, where blocks representing new captures are distinguished by light shading. The pattern, as for females in 1969, is strongly suggestive of a predominantly five-stage nymphal history. A few outliers from the main clusters are again present, but none

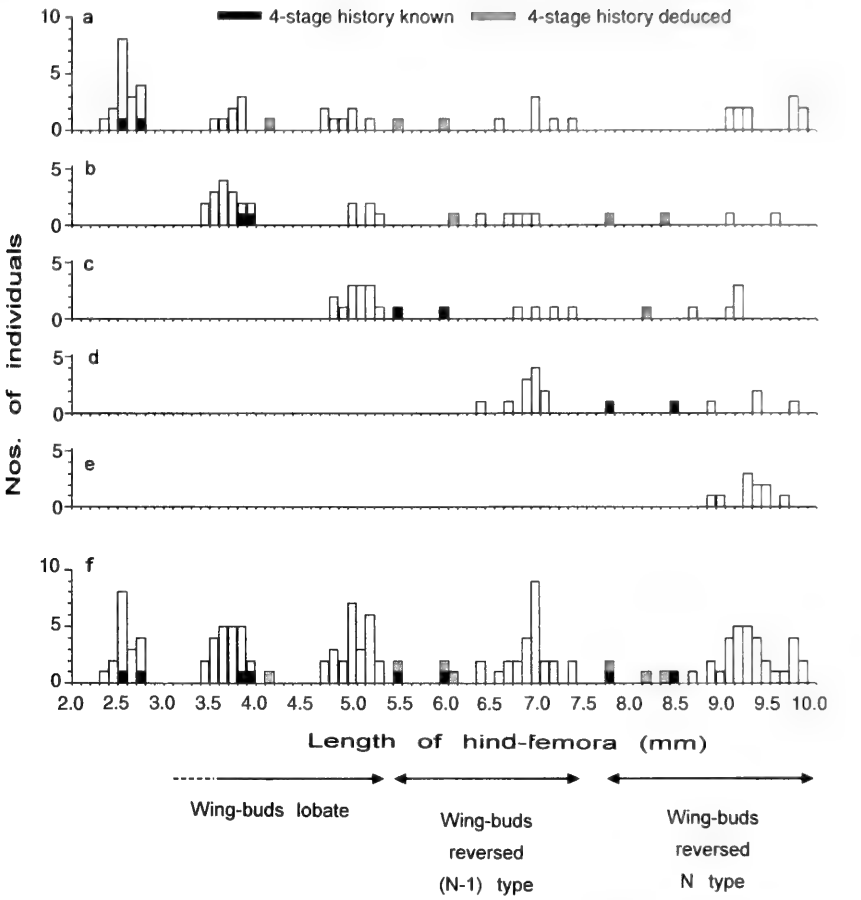

Fig. 2. *C. brunneus*. Hind-femora lengths of female nymphs, Site A, 1969: a—on capture, b—after 1, c—after 2, d—after 3, e—after 4 moults in captivity, f—totals of a–e combined.

this year could be attributed to individuals known from rearing history alone to be four-stage types. Four were however judged to be so when their antennal segmentation was taken into account; the blocks representing these are heavily shaded. These aberrant specimens would not have been recognised by hind femora length alone; only two on capture had dimensions that stand clear of the main cluster in the penultimate stage while, in the final stage, no such distinction was observed. In fact the reverse inference might be drawn, that the two individuals with hind femora 6.2 mm long in the penultimate stage, and these again plus others with hind femora of 8.9 mm or less in the final nymphal stage, could have been four-stage types. Rearing details alone were insufficient to dispel this view, but, when combined with antennal segmentation, gave clear indication of a five-stage sequence for all these.

One female taken in the first stage had wing-reversal delayed until the fourth moult and died in the fifth stage. Had it lived it presumably would have had six nymphal stages. Data for this specimen have been omitted from the results included here.

Sites B and C, 1973 and 1975

The distribution of hind-femora lengths for all stages, caught and reared, from both sites and for both years combined, are shown as histograms in Fig. 4. The close similarity of the clustering to that seen for site A indicates that again a five-stage history predominated. In 1973 two individuals from site B had hind-femora measurements that, combined with wing structure, distinguished them from the main clusters. One of these was identified as a four-stage type when the antennal segmentation was taken into account. No segmentation was recorded for the other, but the appearance of reversed wing-buds on moulting from a nymph with

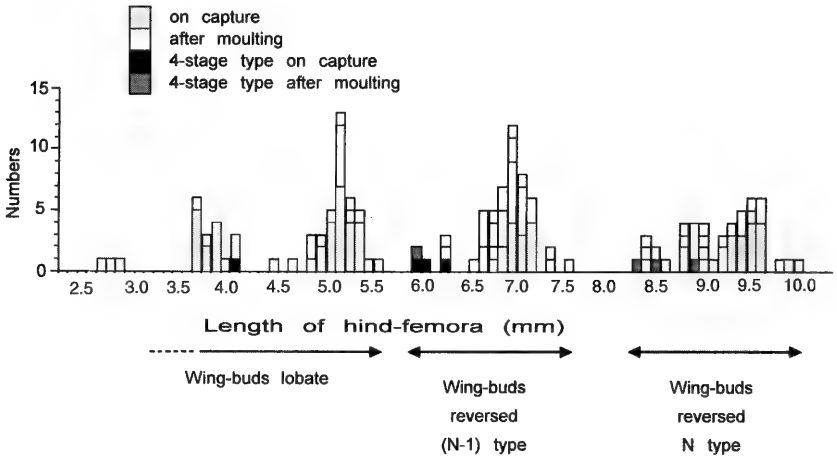

Fig. 3. *C. brunneus.* Hind-femora lengths of female nymphs, Site A, 1970: all data combined.

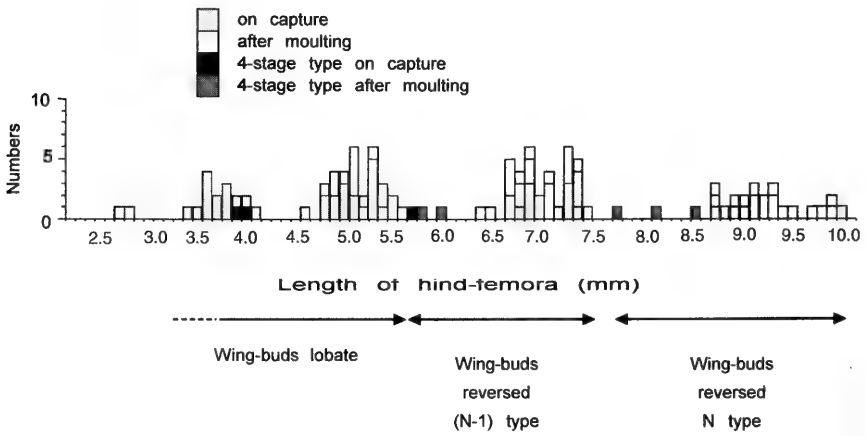

Fig. 4. *C. brunneus.* Hind-femora lengths of female nymphs, Sites B and C, 1973 and 1975: all data combined.

hind-femora only 3.9 mm long strongly suggested that this also was of a four-stage type. In 1975 a third specimen from site B was again regarded as having four nymphal stages on the strength of hind-femora measurements and sequence of wing development; for this the antennal segmentation provided supporting evidence. The blocks representing these three individuals are shaded more strongly.

For the second instar of most females the ovipositor valves of sternite 8 were present as a pair of blunt triangles, varying in size, but with the apices noticeably short of the rear end of sternite 9. In this they contrasted with female *C. parallelus* for which, in the second of the four-stage sequence typical of this species, the valves of sternite 8 normally reach, or even overlap, the rear end of sternite 9. Two of the nymphs apparently approached this conformation, but, for these, sternite 9 either had a strongly excised rear margin or, more probably, bore a curved pre-apical groove that could be mistaken for this; these two shared the common five-stage sequence. For the only nymph with a four-stage history to be thus examined in the second stage this feature did not appear to be markedly different from that of most of the others. It seems possible that the relative positions of these parts may change with the distension of the segments as the stage progresses and that a more extensive appraisal is needed to detect any difference, if such exists, between the two nymphal types.

Supplementary, 1976

The four-stage female taken in the second stage from site B and reared to an adult in 1975 remained in isolation until mated with a wild adult male from the same site. From the three batches of eggs laid, 17 nymphs hatched the following year. Two died at the first moult, but the remainder, housed two to a 2-lb jam-jar, were reared as described for 1969. A male and a female, both with reversed wing-rudiments, died in the third stage; 13 others reached the adult state. Of the 15 that could be categorised, five were five-stage and four were four-stage females, six were four-stage males. The antennal segmentation was recorded for the adults and for all female nymphal casts (see Tables 1 and 2), that for the four-stage females agreeing with the findings for the two sharing a known four-stage history in 1969.

Antennal segmentation

The antennae of first-stage nymphs consisted, without exception, of a scape and pedicel followed by an 11-segmented flagellum. Occasionally, towards the end of the stage, faint indications of future subdivisions became visible through the integument, but, after moulting, the flagellar sheath retained its 11 segments. In the second stage the original segmentation was still clearly defined by bold sutures, but slightly weaker new ones were visible on flagellar segments 1 and 6 and, with decreasing intensity, on segments 5, 4 and sometimes 3. Antennal casts of these and succeeding stages normally reproduced exactly the segmentation observed in the living insect. While the antennal characteristics of the first two instars offer an additional feature for identifying these, they provide no clue as to the future developmental pattern. Counts recorded here have been restricted to those for the later instars, when enumeration of the stage coupled with the aspect of the wings is of value in this connection.

The segmental counts reported by Richards & Waloff (1954) tend to span rather wide ranges, with some overlap between successive stages. Some of this variation may be attributed to the uncertain status of one of the divisions towards the base of the flagellum which, by being often weaker than the others, leaves in doubt whether

the region involved should be counted as one segment showing incipient subdivision or as two segments partially fused. Mason (1954) accepted the second interpretation and appended to the total count two (or more) consecutive numbers joined by a plus sign to denote the partially fused segments; this system, with the fused segments shown in brackets, has been adopted here. Counts, expressed in this way, of flagellar segments for nymphs are shown in Table 1, and for adults in Table 2.

The differing total counts for any one of these later stages can be adjusted by the addition of the first bracketed figure. Thus flagellar counts for third instar females that, depending upon interpretation, could be regarded as ranging between 15 and 19 are brought to a common value of 22, a sum that increases by two at each subsequent moult. This regularity has been of value in deducing the numerical stage when rearing details were incomplete. In the tables, the number of individuals having any one count is indicated by two figures separated by a colon. The first of these is the number for which stage and developmental type are known from rearing history; the second is the number assigned to that stage through a shared flagellar segmentation. For the latter, inclusion in a particular developmental category has been based on a combination of numerical stage thus deduced with a rearing history that, although incomplete, includes stages N-1, N or adult.

Growth of the hind femora

The factorial increase in length of the hind-femora at each moult was calculated for the entire sequence recorded for every individual of known or deduced nymphal history. The combined values for years and sites are summarised for males and both female sequences as ranges and means ± one standard deviation of the mean (1 sem) in Table 3. The relatively steady value of the factor over the successive nymphal

Table 1. Flagellar segmentation of nymphal instars.

		Five-stage ♀			Four-stage ♀			Four-stage ♂
		1969	1970	1976	1969	1970	1976	1969
3rd instar	16 (6+7)	0:1	0:1					
	17 (5+6)	1:5	0:2	2:0				
	18 (4+5)	10:5	2:9	3:0	1:2	0:1	3:0	1:1
	19 (3+4)				1:1	0:3		4:9
4th instar	19 (5+6)	0:1	0:1					
	20 (4+5)	8:5	1:33	5:0		0:1		
	21 (3+4)		0:1		0:3	0:3	3:0	4:4
5th instar	21 (5+6)		0:1					
	22 (4+5)	5:2	0:36	5:0				
	23 (3+4)	1:0	0:1					

Table 2. Flagellar segmentation of adults.

	Five-stage ♀		Four-stage ♀				Four-stage ♂
	1970	1976	1969	1970	1973 1975	1976	1976
23 (3+4)			0:1	0:1	0:2	3:0	5:0
24 (4+5)	0:15	5:0					

Table 3. Factorial increase in length of hind-femora at each moult.

Five-stage females, Site A, 1969–70					
Moult	1st	2nd	3rd	4th	Final
Number	13	26	48	37	32
Range	1.37–1.50	1.26–1.44	1.26–1.43	1.23–1.37	1.20–1.32
Mean ± 1 sem	1.43 ± 0.01	1.38 ± 0.01	1.36 ± 0.005	1.33 ± 0.005	1.25 ± 0.005
Four-stage females, Site A, 1969–70, Site B, 1973, 1975					
Moult	1st	2nd	3rd	Final	
Number	2	6	11	7	
Range	1.44, 1.52	1.45–1.54	1.34–1.44	1.23–1.30	
Mean ± 1 sem	1.48	1.49 ± 0.01	1.40 ± 0.01	1.27 ± 0.01	
Males, Site A, 1969					
Moult	1st	2nd	3rd	Final	
Number	10	15	20	12	
Range	1.37–1.54	1.38–1.47	1.26–1.40	1.20–1.27	
Mean ± 1 sem	1.46 ± 0.02	1.42 ± 0.01	1.35 ± 0.01	1.25 ± 0.005	

stages is in accord with Dyar's rule (1890); the rather sudden decline for the final moult parallels that found for the migratory locust by Duarte (1938). The slightly larger values at each moult for the females having four nymphal stages as compared with those having five reflects the out-of-step growth patterns of the two types.

Discussion

It has been shown that the majority of female *C. brunneus* studied at three sites in the Croydon area had five nymphal stages, while a small proportion from two of these passed through only four. The first intimation of a five-stage nymphal history came from the developmental pattern seen at Aberystwyth, when the possible occurrence of the shorter sequence was not foreseen. Evidence for the presence there of both types is however provided by seven pinned females, collected as adults, that remain from this period. Antennal segmentation of six confirms a history of five nymphal stages, while for the seventh it is indicative of a development completed in only four. A mainly five-stage nymphal sequence, with a small contribution from four-stage individuals, has also been reported by Hassall & Grayson (1987) for female *C. brunneus* at two sites in East Anglia. This pattern of development has therefore occurred in Britain across a wide geographical range.

Variation in instar number is well recognised in non-British Acrididae and, for some locust species, has been associated with phase variation (Uvarov, 1966). Possibly because locusts have been much studied in the swarming phase, the lower number of instars typical of this has been regarded as the norm, the solitary individuals being credited with an extra stage. Historically the term "extra" has often been applied to one particular instar, pictured as an interpolation between two consecutive stages of the shorter sequence and duplicating, in a larger version, that preceding it. Nomenclature has reflected this, so that a third instar considered as the extra has been numbered IIa. This is misleading in implying, probably incorrectly, that instar II is fully equivalent in both sequences. In the examples of female *C. brunneus* encountered here it is clear that the nymphal stages, whether four or five, follow a regular progression, with the growth of the hind-femora in reasonable agreement with Dyar's rule, a continuous development of the external genitalia and a

steady increase in antennal segmentation. It is now suggested that instars would be more adequately described by a notation in which the numerical stage and developmental pattern, when known, are both shown, as in 2/4 to indicate the second in a four-stage sequence, thus emphasising the distinction between instars 2/4 and 2/5. Some of these stages for female *C. brunneus* can be diagnosed with reasonable certainty although, as results for 1970 show, hind-femora measurements alone may not be sufficient. Antennal segmentation of the adults records their nymphal history and, for the last two nymphal instars, permits the identification of 3/4, 4/4, 4/5 and 5/5 individuals. Stage 3/5 may be deduced from a combination of antennal features and the possession of pre-reversal wing-buds, although there remains a remote possibility that this could be 3/6. Recognition of instar 2/4 among typical 2/5 types has not been achieved, but may come about through fuller study of the external genitalia. No means of distinguishing between instars 1/4 and 1/5 have been found, if indeed the future developmental route is already predetermined at hatching.

There remains the question of the significance of the naturally-occurring four-stage females and the factors influencing their production. Any effect comparable with phase variation would require the four-stagers to be more frequent in dense populations, or, at least, among the offspring of such populations (Albrecht, 1955). No attempt was made to assess the population densities of the colonies studied here, but the low incidence of four-stagers would not have permitted valid comparison. For non-British grasshoppers, variable instar numbers have been associated with temperature (Parker, 1930), geographical range (Shotwell, 1941) and food (Smith, 1959). Several workers since Richards & Waloff, rearing females of *C. brunneus* in captivity, have clearly indicated a four-stage nymphal development (Moriarty, 1969), strongly implied this (Kelly-Stebbings & Hewitt, 1972) or at all events made no comment contrary to the prevailing view, so that Hassall & Grayson (1987) regarded their finding of five stages as abnormal. It is difficult to assign common features to accounts of captive rearing, but fairly widely reported are an elevated laboratory temperature, artificial irradiation, grass specially grown for food, rearing in groups and housing in better ventilated conditions than those described here. Sometimes the specimens have been drawn from stock maintained in captivity for several generations. Hassall & Grayson (1987) found that second-generation laboratory-bred females from one site passed through only four nymphal stages when the quality of their food was reduced.

Such factors may not be the only influence, as both types of female were among the siblings hatched in 1976 and reared under similar conditions; indeed one of each type actually occupied the same jar throughout nymphal development. That these were the offspring of a four-stage female might suggest a heritable effect, although whether truly genetic or more akin to the transmission through the generations of phase differences cannot be determined on this evidence alone. Whatever may be the explanation for the presence of four-stage females in natural populations it would seem that this is most likely to be provided by those encountering them routinely during captive rearing.

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I wish to thank the Authorities of the Royal Russell School for allowing me to work in the school grounds, and my son, Graham A. Collins, for preparing the histograms.

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SHORT COMMUNICATION

***Stigmus pendulus* (Panzer) (Hymenoptera: Sphecidae) associated with ancient woodlands in south-east London.**—Since *Stigmus pendulus* was first discovered in Britain by Allen (1987) it has remained rather a mystery. At the time of Falk's review (1991) it was known only from Allen's original East Kent specimen and two more from the other side of the Thames in South Essex. Published records seem few: Uffen (1997, 1998) has recorded it twice from Hertfordshire. However, it is obviously much more widespread and there are many more records from South Essex (P. R. Harvey, personal communication) and Surrey (Baldock, in preparation). I was not, therefore, too surprised to find it at several localities in the London area.

What I did find surprising, or at least ironic, is that here it seems to be associated with ancient woodland! So far *Stigmus pendulus* has been found at four sites.

Sydenham Hill Woods, Dulwich (TQ3472, Surrey), 20.vi.1993, 30.viii.1993, found by D. W. Baldock in 1997 in Malaise trap material which had been stored in alcohol for several years. Sydenham Hill and Dulwich Woods are reckoned to be remains of the "Great North Wood", a series of oak copses and wooded commons extending through south-east London from Selhurst to Brockley. A large number of

acknowledged ancient woodland indicator species have been recorded from the site (Jones, in preparation).

Woodlands Farm, Bexley (TQ4476, West Kent), 9.ix.1998, a single specimen sweeping at the edge of a large field, once arable, but which had lain fallow for about 10 years. Nearby was a patch of old oak woodland and the renowned ancient woodland SSSI Oxleas Wood was less than a kilometre away.

Woodland Walk, Downham, (TQ3871, West Kent) 16.vi.1999, one swept. Woodland Walk is a curious narrow wooded path, zigzagging at right angles between the houses and gardens of the Downham estate, laid out in the 1930s. It is recognizable on maps from the middle of the 19th century and is possibly the remains of an old green lane following ancient hedgerows and field boundaries. Numerous acknowledged ancient woodland "indicator" species were also found on the site (Jones, in preparation).

Mayow Park, Lower Sydenham (TQ3571, West Kent), 9.vi.1999, one found by sweeping. Although primarily playing fields with close-mown utility grass, this small park is dominated by many ancient pollard oaks which predate the landscaping of the park in 1877.

South-east London might not immediately be linked, in most people's minds, with ancient woodland, a scarce and vulnerable habitat, but various of the local open spaces are obvious survivors from the era before urbanization; they contain large mature trees and numerous ancient woodland "indicator" species. It is unlikely that *Stigmus pendulus* has any true association with ancient woodland, and is more likely to be generally associated with woods in general. In Surrey it is known from parks, gardens and commons, often in company with *Stigmus solskyi* (D. W. Baldock, personal communication). It will be interesting to see, as further records of *Stigmus pendulus* appear, whether any wider association with old woodland emerges.

Acknowledgements—My thanks to David Baldock and Peter Harvey for their information on this species.—RICHARD A. JONES, 135 Friern Road, East Dulwich, London SE22 0AZ. bugmanjones@hotmail.com

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FUNGUS GNATS (DIPTERA: SCIAROIDEA) NEW TO BRITAIN

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Abstract: The British fauna of the families Ditomyiidae, Keroplatidae and Mycetophilidae is updated and changes introduced in the checklist explained. Six species of Mycetophilidae are newly described: *Clastobasis loici*, *Sciophila caesarea*, *Brevicornu rosmellitum*, *Mycetophila eppingensis*, *M. deflexa*, *Phronia carli* (the two latter previously misidentified as *M. gratiosa* Winnertz and *P. longelamellata* Lundström respectively). A new name is also proposed for a homonym: *Exechia macula* for *E. maculipennis* (Stannius). *Dynatosoma norwegiense* Zaitzev & Økland is indicated to be *thoracicum* sensu Landrock of the checklist. *Sciophila quadriterga* Hutson is a synonym of *S. thoracica* Staeger. Lectotypes are designated for *S. thoracica* and *Boletina sciarina* Staeger. A lectotype designation for *Mycetophila bicincta* Staeger is considered inappropriate. The seven species additional to the Royal Entomological Society Handbook dealing with part of this group are figured. New British records of 27 species are provided, one species is new for Ireland and two species are new for the Channel Islands.

INTRODUCTION

In the recent new checklist of British Diptera (Chandler, 1998c), 17 species of fungus gnats were listed as "added by Chandler (in preparation)" and the existence of several undescribed species was also mentioned. One of the latter has already been described (Chandler, 1999) and most of the others are described here; the *Docosia* and *Cordyla* species will be dealt with elsewhere. Comment is given on the British status of the species newly added in the checklist and also on the three species added in Recording Scheme reports (Chandler, 1997, 1998a) and one added in an Exhibition Report (Chandler, 1994b).

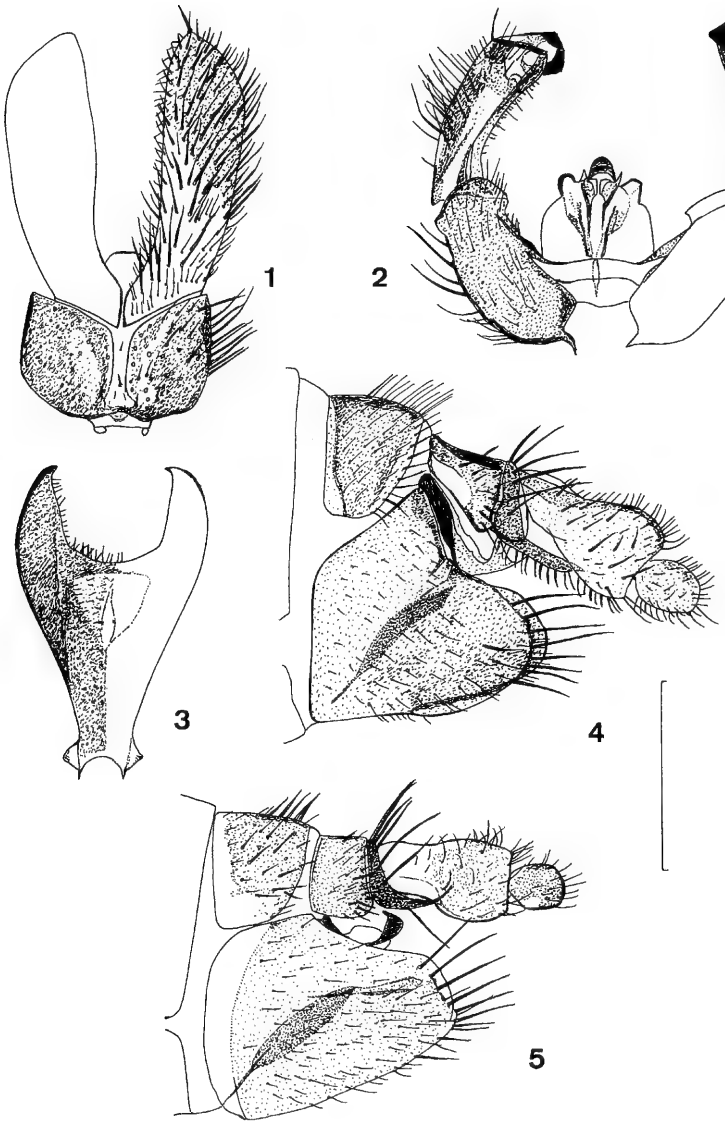
Of the species dealt with here, all of those belonging to groups covered in the Handbook by Hutson *et al.* (1980) are figured and their diagnostic characters indicated. For the Mycetophilinae, where there is not yet a Handbook, only the new species and one newly recorded for the Palaearctic Region are treated in this way.

Material listed is in the collection of the author or other collectors unless stated otherwise. The Museums involved are abbreviated as follows: BMNH = Natural History Museum, London; ETHZ = Eidgenössische Technische Hochschule, Zürich; NMS = National Museums of Scotland, Edinburgh; OXUM = Oxford University Museum; ZMUC = Zoological Museum of the University, Copenhagen.

DITOMYIIDAE

Symmerus nobilis Lackschewitz (Figs 1–4)

This was reported (Chandler, 1997) as a surprising addition to the British list, based on three males from the same Scottish locality. It is easily distinguished from the widespread species *S. annulatus* (Meigen, 1830), which was present at the same site, on colour characters and the structure of the genitalia (Figs 1–4). The figure of the female is based on a Swiss specimen and the ovipositor of *S. annulatus* (Fig. 5) is figured for comparison. *S. nobilis* is widespread in Europe but apparently always scarce.



Figs 1–5. Genitalia of *Symmerus* species. 1–3, *S. nobilis* Lackschewitz, male: 1, tergite 9 and cerci; 2, ventral view of gonocoxites, gonostyli and aedeagus; 3, sternite 8. 4–5, lateral view of female genitalia: 4, *S. nobilis*; 5, *S. annulatus* (Meigen). Scale line 0.5 mm.

The two British *Symmerus* species can be separated as follows. The knob of the halteres is black and the legs yellow in both species:

Males

Thorax yellowish except for three fused shining dark brown stripes on mesoscutum, the middle stripe extending to the fore margin. Abdomen with tergites black, sternites 1–4 yellow, rest and genitalia brown. Head dark brown; antenna with scape and pedicel yellow but flagellum all black. Wing length 6.0–6.1 mm *nobilis* Lackschewitz

Thorax more uniformly yellowish brown with two vague broad brown lateral stripes near wing base and median stripe absent. Abdomen with yellow basal bands on tergites 2–7, sternites all yellow. Antenna with basal part of flagellum also yellow. Wing length 6.2–7.3mm. *annulatus* (Meigen)

Females

Thorax entirely shining black on mesoscutum, pleura and mediotergite brownish yellow. Abdomen entirely shining dark brown and ovipositor brown. Antenna as male, scape and pedicel more brownish yellow. Wing length 7.1 mm (1 Swiss specimen). *nobilis* Lackschewitz

Thorax as male, but usually with shining median stripe to fore margin (reddish brown or sometimes darker; occasionally stripes fused with only humeral area pale) and with dark marking on lower part of laterotergite and mediotergite. Abdomen dark brown to segment 7, but ovipositor paler, more yellowish. Antenna as male, with flagellum yellow to flagellomeres 5–6 (or less in darker specimens).Wing length 5.1–6.3 mm. *annulatus* (Meigen)

British material of *S. nobilis*:

SCOTLAND: *Inverness-shire*, Glen Coiltie, around piles of fallen branches by River Coiltie in mixed deciduous woodland, 3 males: 21.vii., 23.vii and 24.vii.1997 (Chandler, 1 male in NMS).

KEROPLATIDAE

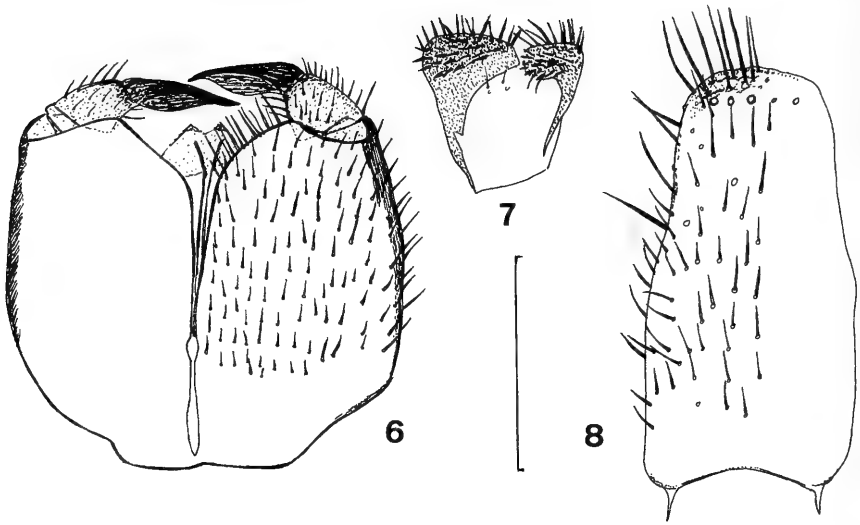
Orfelia bicolor (Macquart) (Figs 6–8)

This species was recorded as British by Chandler (1992a), who figured the ovipositor, based on a single female from Magor Marsh, Gwent in Wales. One male has now been found in Britain, from which the genitalia are figured (Figs 6–8). This was obtained from a forested site, which is more typical of the habitats in which *O. bicolor* has been recorded in Europe.

As in the case of the female, it does not fit either of the alternatives in couplet 1 of the key to the genus by Hutson *et al.* (1980), since the thorax is dark dorsally while the pleura, a narrow humeral area and the apical margin of the scutellum are yellowish; the mediotergite is darker yellowish. The abdominal tergites 2–4 and 6 are yellow on the apical half (or more on tergite 2), tergite 5 is dark and the genitalia are brown. The gonostylus is single in common only with *nemoralis* (Meigen) and *pallida* (Staeger) among British *Orfelia* species, but differs from them in its simple narrow and apically flattened form. Wing length of this specimen 3.2 mm.

British male material of *O. bicolor*:

ENGLAND: *Bucks*, Burnham Beeches, Malaise trap, 20.vii–2.viii.1995, 1 male (J.W. Ismay; in author's collection).



Figs 6–8. Male genitalia of *Orfelia bicolor* (Macquart). 6, ventral view of gonocoxites, gonostyli and aedeagus; 7, cerci; 8, tergite 9. Scale line 0.2 mm.

MYCETOPHILIDAE

Gnoristinae

The *Boletina sciarina* Staeger Group

Zaitzev & Polevoi (1995) described four new species of the *B. sciarina* Staeger group from Russian Karelia and two of these, *B. minuta* and *B. populina*, have now been found to occur in Britain. In the case of *B. minuta*, I had previously confused it with *B. moravica* Lundström which is an uncommon but widespread species in Britain. All of the species from couplet 16 onwards in the key by Hutson *et al.* (1980) belong to this group, which have the laterotergite ("pleurotergites" in the key) bare, the costa extended well beyond the tip of vein R_5, the antennal flagellum all dark and the hind coxa partly or entirely yellow.

With these additions, there are eleven British species which are reliably separated only on the structure of the male genitalia; all species are small, wing length less than 4mm, black bodied with mainly yellow legs. Most species of the group, apart from the very common *B. gripha* Dziedzicki and the frequent *B. trispinosa* Edwards, have the coxae entirely yellow but these two additions may have the coxae entirely yellow or slightly darkened basally.

B. sciarina was the earliest described species of this group (Staeger, 1840), of which *B. gripha* Dziedzicki is the commonest species and present interpretation follows Dziedzicki (1885), who described several other related species, so it is important to establish its identity. Staeger did not state how many specimens he described it from, but mentioned both sexes and gave a size range and flight period. Edwards (1924) only said of Staeger's types "the series includes some *B. sciarina* in Dziedzicki's sense and also some *B. gripha* Dz." I have examined Staeger's material (ZMUC), which comprises 12 males and 3 females, all assumed to be syntypes. One male is labelled

"Ordr. [=Ordrup, near Copenhagen] St." and one female is labelled "St."; other specimens are unlabelled but all presumably Danish. The males include 6 *B. gripha* (including the labelled specimen), 1 *B. lundstroemi* Landrock, 1 *B. populina*, 3 with abdomens partly missing so undeterminable and 1 *B. sciarina* sensu Dziedzicki. I have labelled the last specimen as lectotype to maintain established usage.

Boletina minuta Polevoi in Zaitzev & Polevoi (Figs 9–12)

B. minuta is most readily recognised by the structure of the distal margin of the gonocoxites, which bear a long curved medial process with a simple rounded lobe and a shorter setose lobe lateral to it. It also differs from *B. sciarina* in the short blunt ended parameres (Figs 10–11).

The types were collected in a birch (*Betula*) and aspen (*Populus*) stand. The British material is from diverse deciduous woodland sites. I also have a male collected in conifer forest in Poland, Cisna, 20.ix.1991 (A.E. Stubbs). Wing length of material examined 3.2–3.5 mm.

British material of *B. minuta*
ENGLAND: *Berks*, Newbury, Greenham Common, 20.iv.1974, 1 male (D.M. Ackland, in author's collection); *Berks*, Windsor Forest, 10.v.1978, 1 male (Chandler). SCOTLAND: *Aberdeenshire*, Morrone Birkwood, 31.v.1998, 4 males (Chandler and I. Perry).

Boletina populina Polevoi in Zaitzev & Polevoi (Figs 13–14)

This species, reported as British by Chandler (1998a), most closely resembles *B. sciarina*, agreeing with it in the form of the gonostylus, the pointed triangular medial process of the gonocoxites and narrow pointed parameres (Fig. 13). It differs in the parameres being shorter and strongly curved apically and in the more numerous rows of small spines on the cerci (Fig. 14). Wing length of material examined 3.2 mm.

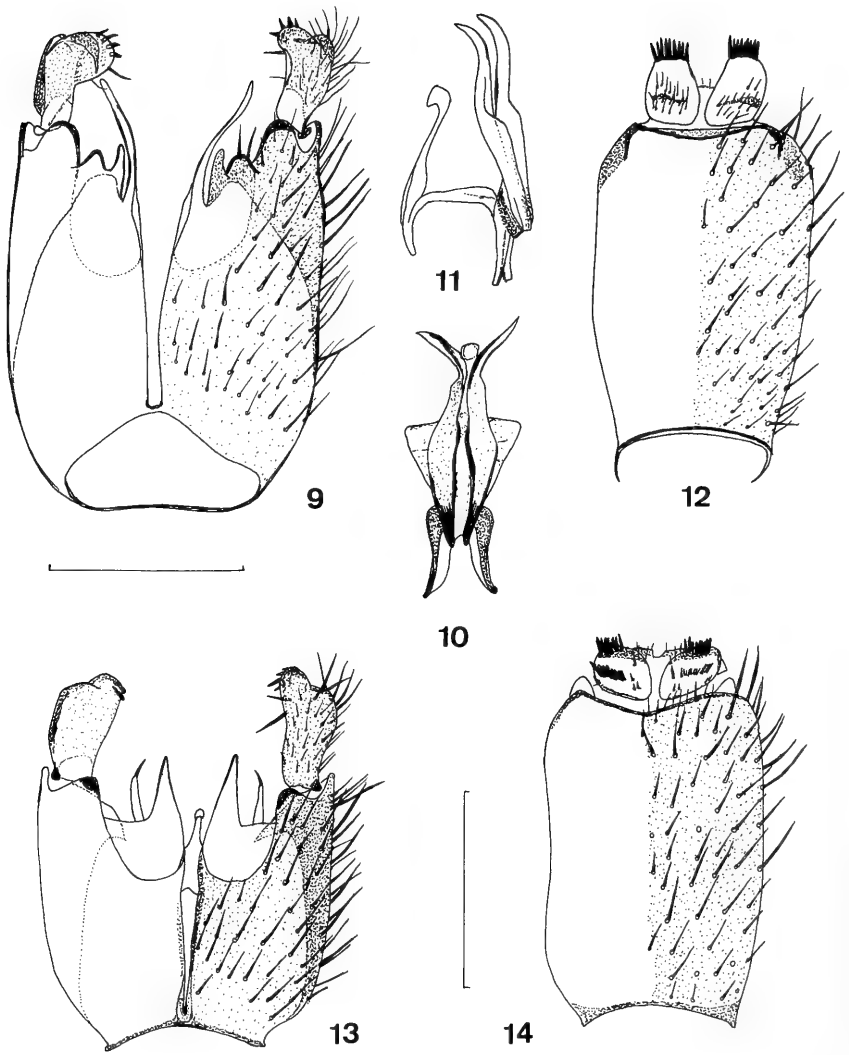
The holotype was from an aspen (*Populus tremula*) stand; the Perthshire site is a gorge with mixed deciduous woodland, while the Aberdeenshire site is open birch (*Betula*) and juniper (*Juniperus*) woodland, rich in bryophytes, and the visit on which it and *B. minuta* were found was notable for producing 10 species of *Boletina* including six members of the *sciarina* group.

British material of *B. populina*
SCOTLAND: *Perthshire*, Pass of Killiecrankie, 25.vi.1997, 1 male (I. Perry); *Aberdeenshire*, Morrone Birkwood, 31.v.1998, 3 males (Chandler and Perry).

Leiinae

Genus *Clastobasis* Skuse

This is a genus new to the British Isles, which runs in the keys by Hutson *et al.* (1980) to *Leia* Meigen and most species of both genera are mainly yellow in colour. It agrees with most of the characters listed for *Leia*, except for vein sc-r (Sc_2 in the key) being absent and the wings being clear yellowish without any marking; at least a subapical wing band is usually present in British species of *Leia*. It also differs in the



Figs 9–14. Male genitalia of *Boletina* species. 9–12, *B. minuta* Polevoi: 9, ventral view of gonocoxites and gonostylus; 10–11, aedeagus and parameres, dorsal and lateral views; 12, tergite 9 and cerci. 13–14, *B. populina* Polevoi: 13, ventral view of gonocoxites and gonostyli with aedeagus and parameres in situ; 14, tergite 9 and cerci. Scale line 0.25 mm (*minuta*), 0.2 mm (*populina*).

lateral ocelli being closer to the eye margins and the branches of the median fork at least slightly convergent apically, M_1 being downturned apically. Most species of the genus, which is rich in species in the tropics, have annulated antennae, which are yellow with each flagellomere brown apically, a character not found in *Leia*.

The widespread European species *C. alternans* (Winnertz, 1863) is now known from southern England and a second species, here described as new, has been found on Jersey, Channel Islands. Although these species are of similar appearance, their genitalia are very different.

Clastobasis alternans (Winnertz) (Figs 15–17, 21, 23)

C. alternans has been found at six localities in England north to Yorkshire in recent years, mostly at wooded fen or carr woodland sites with an anomalous record from Buckingham Palace Gardens where the only wetland vegetation is a narrow strip at the margin of the lake.

This species is predominantly yellow, with dark antennal and abdominal markings (Fig. 23). All flagellomeres are dark apically, this colour occupying progressively more of the length until the last flagellomere is nearly all dark. The abdomen has dark bands on the apical third to half of tergites 1–5, these bands narrowed medially on 1–4 but broadly extended to the base dorsally on tergite 5, with a slight dark patch at the base of tergite 6. The head has a dark patch internal to each lateral ocellus. Genitalia Figs 15–17 (male), 21 (female). The wing length of material examined is 4.2–4.4 mm (male) and 4.4–4.7 mm (female).

British material of *C. alternans*

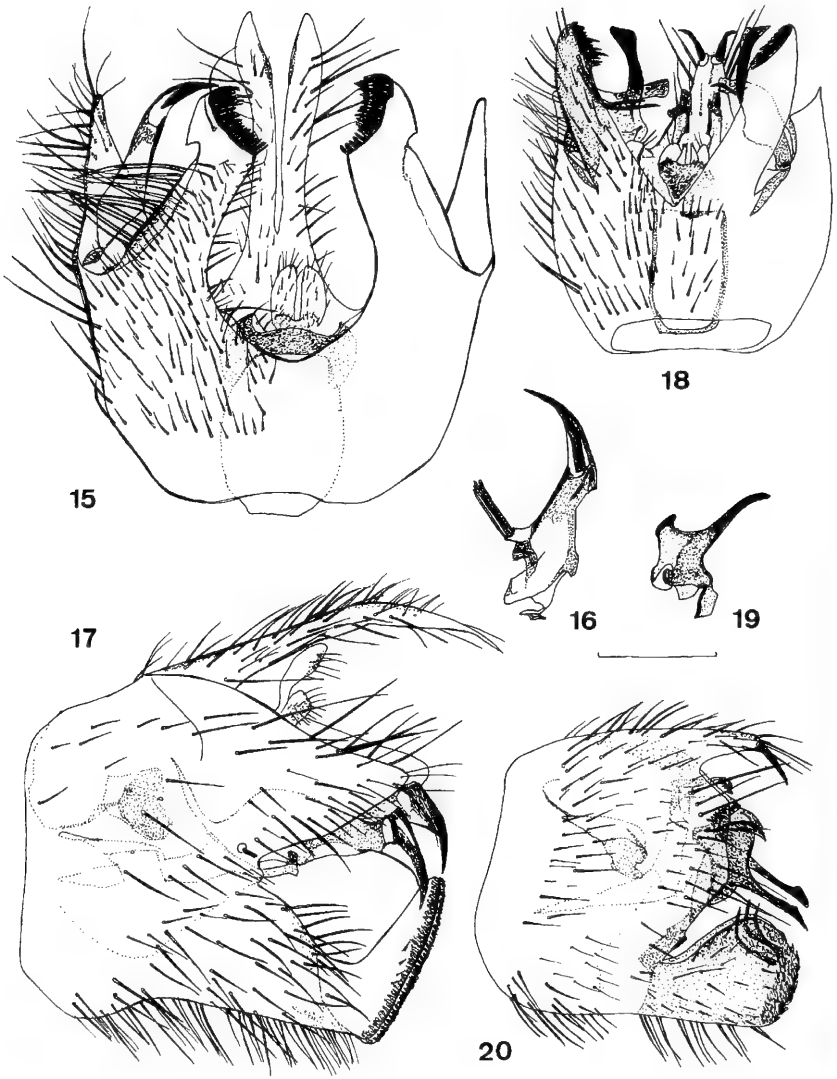
ENGLAND: *Middlesex*, Buckingham Palace Gardens, Malaise trap catch till 7.vii.1995, 1 male (via C. Plant); *Gloucs*, Coombe Hill Canal SSSI, 21.v.1994 (C.M. Drake); *Cambs*, Osier Lake, Godmanchester, late viii.1998, numerous in *Salix* carr (J.H. Cole); *Cambs*, Paradise, 19.vii.1998, 1 male (I. Perry); *Norfolk*, Wheatfen Broad, 10.vii.1993, 1 male (I. Perry); *Yorks*, Wheldrake Ings, 17.vii.1996, numerous in hedges by water meadows (Chandler and others, some deposited in NMS).

Clastobasis loici sp. n. (Figs 18–20, 22)

Male. Mainly yellow with dark annulations on antenna and dark abdominal markings. Head yellow, more brownish on frons, with a black patch internal to each lateral ocellus. Antenna longer than mesoscutum; yellow with a dark apical marking on each flagellomere, increasing in extent on basal flagellomeres, occupying apical half of flagellomeres 9–13 and apical two thirds of elongate apical flagellomere. Palpus slender, yellow.

Thorax yellow except for shining brown disc of mediotergite. Thoracic hairs and setae yellowish to brown. Scutum with short yellow hairs on disc, strong marginal, postalar and prescutellar setae; prothorax with strong lateral setae and 4 strong downturned proepisternals; laterotergite with long fine yellow setae; 2 pairs strong scutellars.

Legs entirely yellow including long slender tibial spurs (1:2:2). Tibia 2 with 6 strong anterior setae (becoming anterodorsal on apical half), 5 strong posterodorsals, a weaker seta basal to each of these series and 2 weak setae in gap between last 2 posterodorsals; several short anteroventrals and posteroventrals and a complete series of shorter posterior setae. Tibia 3 with 8 stronger anterodorsals, with



Figs 15–20. Male genitalia of *Clastobasis* species. 15–17, *C. alternans* (Winnertz): 15, ventral view; 16, gonostylus; 17, lateral view. 18–20, *C. loici* sp. n.: 18, ventral view; 19, gonostylus; 20, lateral view. Scale line 0.2 mm.

several shorter intervening setae; 6 strong posterodorsals; shorter anteroventral, posteroventral and posterior series as on tibia 2.

Wing clear yellowish, with all veins yellow and setulose except short Rs which is bare. Crossvein r-m a little longer than stem of median fork. Vein M_2 distinctly upturned apically and strongly convergent with M_1 which is downturned apically.

Posterior fork with anterior branch slightly interrupted at base. Costa ends at tip of R_5 before wing tip. Haltere yellow.

Abdomen mainly yellow with apical (medially narrowed) brown band on tergites 1–4, tergite 5 with the brown band extended towards fore margin medially; tergite 6 with brown basal band. Sternites yellow, with brown markings laterally on sternites 5–6. Genitalia (Figs 18–20) yellow with appendages brown; gonostylus broad basally, with slender blunt ended apical process.

Wing length 3.6–3.8 mm.

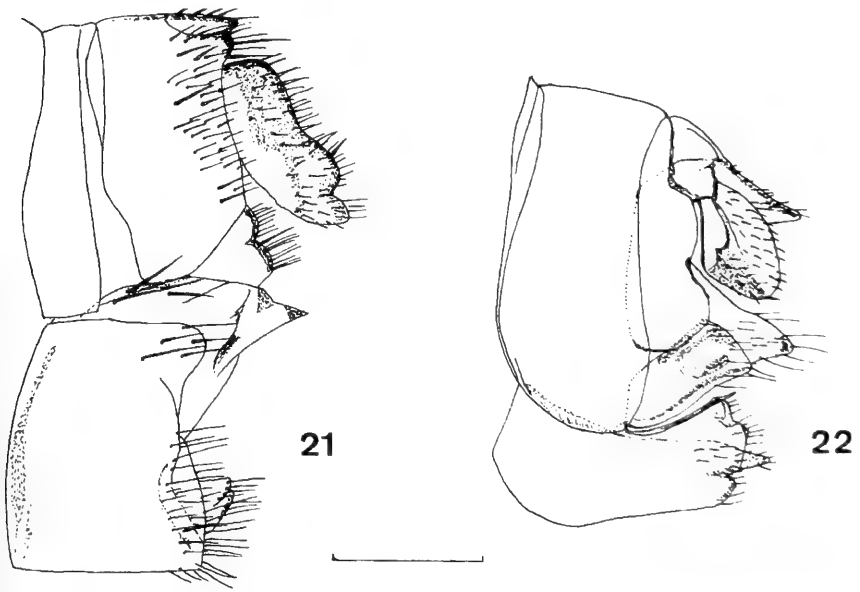
Female. Very similar to male, but antenna relatively shorter, distinctly shorter than mesoscutum. Abdomen with tergites 1–5 with a narrow apical brown band; sternites 6–7 sometimes with a brown patch laterally. Ovipositor (Fig. 22) yellow. Wing length 4.3–4.4 mm.

Holotype male, SWITZERLAND, Ticino, Bolle di Magadino, 16–20.vi.1995, B. Merz & G. Bächli, deposited in ETHZ.

Paratypes: 1 male, data as holotype; 3 males, 1 female, JERSEY, La Mielle de Morville, Malaise trap catch till 16.x.1993; 6 males, JERSEY, Waterworks Valley, St Laurence, Malaise trap catches till 21.vii.1993; 2 males, 1 female, till 28.viii.1994; 1 male, till 8.x.1994 (all A. Warne, in author's collection and pairs deposited in BMNH and NMS).

Other material: 1 male, CZECH REPUBLIC, N. Moravia, Olomouc-Cernovir, 1–2.vii.1958, P. Lauterer, MNHN.

Etymology. Named for the late Loïc Matile to acknowledge his contribution to knowledge of the Afrotropical fauna of fungus gnats.



Figs 21–22. Female genitalia of *Clastobasis* species, lateral view. 21, *C. alternans* (Winnertz); 22, *C. loici* sp. n.. Scale line 0.2 mm.

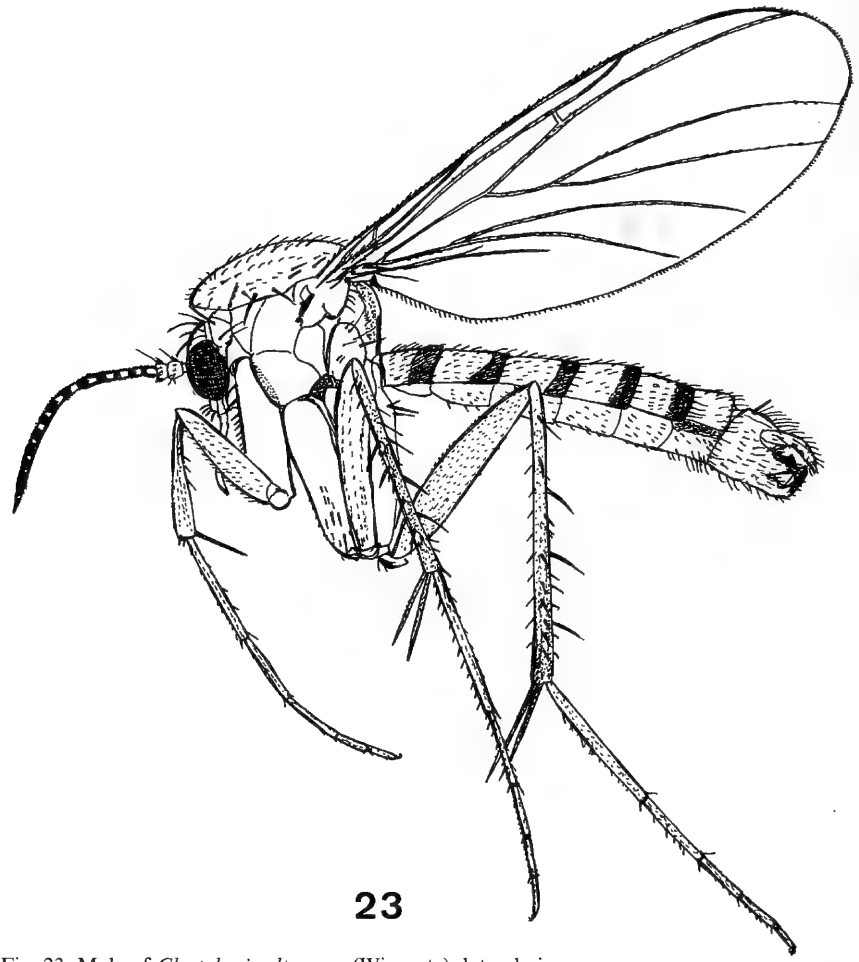


Fig. 23. Male of *Clastobasis alternans* (Winnertz), lateral view.

Discussion. This species was referred to as an undescribed species in the Swiss checklist (Chandler, 1998b) and its presence in the Czech Republic had been recognised by Petr Laštovka.

C. loici bears some resemblance in ventral view of its genital structure to the eastern Palaearctic species *C. gussakowskii* Zaitzev (1994) but a figure of *gussakowskii* in lateral view; forwarded by A.I. Zaitzev shows clear differences, especially in the form of the gonostylus which is broader with a short apical process without the slender neck.

C. loici is also very similar except in genital structure to *C. alternans*. The antennal flagellum has narrower brown bands, not increasing as much in extent on the apical flagellomeres, all of which are clear yellow basally. The wing venation differs in crossvein r-m being relatively shorter, not much longer than the stem of the median fork and the veins of the fork are more strongly convergent apically.

Sciophilinae

Sciophila Meigen

Additions reported here bring the total of British species of *Sciophila* to 21: a further species collected in Scotland by Ivan Perry awaits description by Alexei Polevoi. As indicated by Hutson *et al.* (1980) there are few reliable external characters for species recognition in this genus, colour characters being variable and structure uniform, so most species can be identified only from male genitalia. Since their work, *S. antiqua* Chandler had been added (Chandler, 1987b) and *S. baltica* Zaitzev was reported from Britain on one male by Chandler (1998a).

Some further specimens of *S. baltica* were unrecognised under *S. hirta* Meigen in both the Natural History Museum, London and my own collection. It can be confused with *hirta* due to the similar form of tergite 9, although this is relatively shorter and the unique keyhole-like gonocoxal structure can be seen without removal of the tergite.

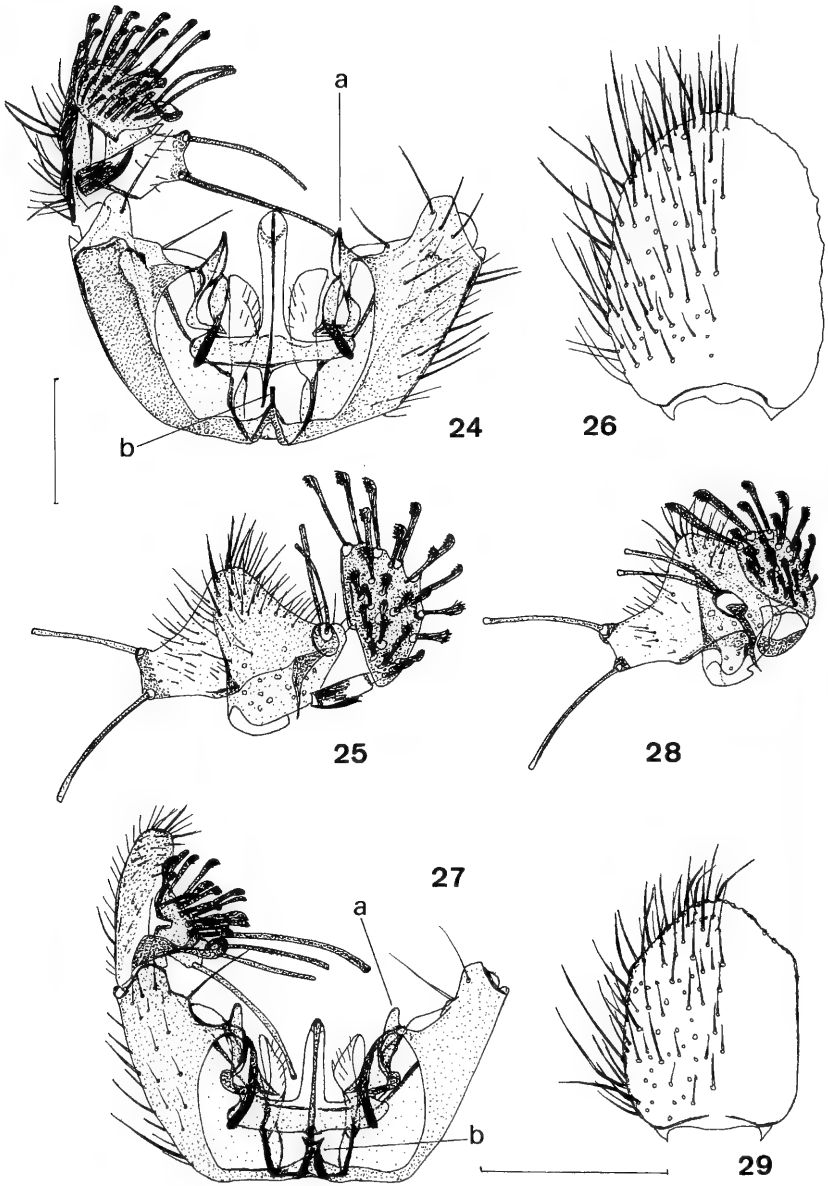
It has now been realised that another species has consistently been confused under *S. hirta* in collections. I first recognised that material from Spain (Zaragoza, Monegros) differed in some respects of its male genitalia from typical *hirta* and then that the same form occurred in Britain; re-examination of the lectotype of *S. parviareolata* Santos Abreu, 1920, which was synonymised with *hirta* by Zaitzev (1982a), has confirmed the suspicion that this represented the second species. As the type of *hirta* is evidently lost, the name is reserved for the species figured by Hutson *et al.* (1980), which is the commoner species in Britain, and *parviareolata* is therefore available for the second species. All material identified as *hirta* will need to be checked.

An undescribed *Sciophila* belonging to the *lutea* Macquart group occurs in the Channel Islands and has been found in other parts of western Europe. This will be described elsewhere (Chandler & Blasco-Zumeta, in press).

Sciophila hirta Meigen and *S. parviareolata* Santos Abreu (Figs 24–29)

These species appear to be inseparable on external characters, both being small and mainly dark coloured with the sides of the thorax including the humeral areas more or less obscurely reddish or yellowish; the legs are yellow with a dark tip to the hind femur more or less apparent, although often vague, resulting in *hirta* being included in two sections of the key by Hutson *et al.* (1980); the antennae are dark with only the first flagellomere sometimes paler.

The figures of the male genitalia (Figs 24–29) show that they are similar in most respects, but draw attention to the points of difference: tergite 9 more evenly rounded apically in *hirta* (Fig. 26), more angular in *parviareolata* (Fig. 29); gonostylus with long macrochaetae on internal lobe usually longer and more numerous in *hirta* (27–29) (Fig. 25), often fewer (21–25) in *parviareolata* (Fig. 28), but some specimens with as many as in *hirta*; distal process of gonocoxal apodeme often broader laterally and tapered apically in *hirta* (Fig. 24, a), but more straight sided and blunt in *parviareolata* (Fig. 27, a); median sternal process between ventral lobes of gonocoxites with apical half narrow but slightly broadened and blunt apically in *hirta* (Fig. 24, b) while it is broad and bifurcate apically in *parviareolata* (Fig. 27, b). The last mentioned character is considered diagnostic while other characters may vary independently. The wing length of material examined is 3.3–3.8 mm (*hirta*) and 2.8–3.7 mm (British material of *parviareolata*; Spanish males 2.1 and 2.8 mm, lectotype 3.0 mm).



Figs 24–29. Male genitalia of *Sciophila* species. 24–26, *S. hirta* Meigen: 24, dorsal view with tergite 9 removed; 25, gonostylus, internal view; 26, tergite 9. 27–29, *S. parviareolata* Santos Abreu: 27, dorsal view with tergite 9 removed; 28, gonostylus, internal view; 29, tergite 9. Scale line 0.2 mm (*hirta*), 0.25 mm (*parviareolata*).

Most British records of *parviareolata* are of specimens taken indoors and the only recent records are those from Buckingham Palace Gardens. No rearing records can be assigned to this species. In addition to 13 British males, material from mainland Spain, Portugal and the holotype from the Canary Islands have been examined.

'Of the British material re-examined in this study, 33 males are confirmed to be *hirta*. These are from ENGLAND: Kent, Surrey, Hants, Bucks, Oxon, Herts, Essex, Cambs, Worcs, Hereford, Cheshire, WALES: Merioneth and SCOTLAND: Midlothian and Inverness-shire (Aviemore), i.e. most counties listed by Hutson *et al.* (1980). This includes material reared from *Collybia maculata*, *Inonotus hispidus*, *Trametes versicolor*, *Bulgaria polymorpha*, *Auricularia auricula-judae* and a blackbird's nest. Other specimens, both reared by F.W. Edwards were labelled as from a "brownish larva on *Stereum* ? *stramineum* on spruce stump" (Hitchin, Herts) and "chocolate brown larva under decaying branch" (Madingley, Cambs).

British material of *S. parviareolata* (all records refer to single males):

ENGLAND: *Middlesex*, Buckingham Palace Gardens, Malaise trap, 12–24.viii.1995, 22.ix–30.x.1995 (via C. Plant, in author's collection); *Middlesex*, BMNH, 24.ix.1915 (F.W. Edwards, BMNH); *Oxon*, Oxford, 14.iii.1936 (O.W. Richards, BMNH); *Cambs*, Newmarket, Sussex Lodge, 8.v.1886, 18.iv.1887, 29.iv.1889 (BMNH), 6.vi.1887, 30.viii.1889 (OXUM) (G.H. Verrall); Newmarket, Raylands, on window, 7.v.1931, 8.vii.1931 (J.E. Collin, OXUM); SCOTLAND: *Midlothian*, Edinburgh, NMS, on window, 13.x.1920 (P.H. Grimshaw, NMS); *Perthshire*, Blairgowrie, 23.v.1908 (A.E.J. Carter, OXUM).

Sciophila baltica Zaitzev (Figs 32–34)

This species runs to couplet 8 in the key by Hutson *et al.* (1980) but the character used in that couplet of the position of sc-r (Sc_2 in the key) is not reliable as it is just before (The Coombe) or just beyond (New Forest) the base of Rs in specimens of *baltica* and similar variation occurs in *hirta* and *parviareolata*, where it may be before or in line with Rs. The antennal flagellum is either all dark or the first flagellomere yellowish. The thorax is broadly yellow to reddish on the humeral area and on the pleura; it is otherwise dark brown dorsally, with the scutellum, mediotergite and abdomen dark. The legs are yellow. The wing length is 2.7–3.4 mm in material examined.

The male genitalia (Figs 32–34) are distinctive. Tergite 9 (Fig. 34) is rounded apically as in the above species but shorter and bearing long marginal setae. The gonocoxites (Fig. 32) have broad dorsal lobes with a semicircular internal excavation, unlike any other known *Sciophila* species. The sites where I have found *S. baltica* are all ancient beech (*Fagus*) woodland.

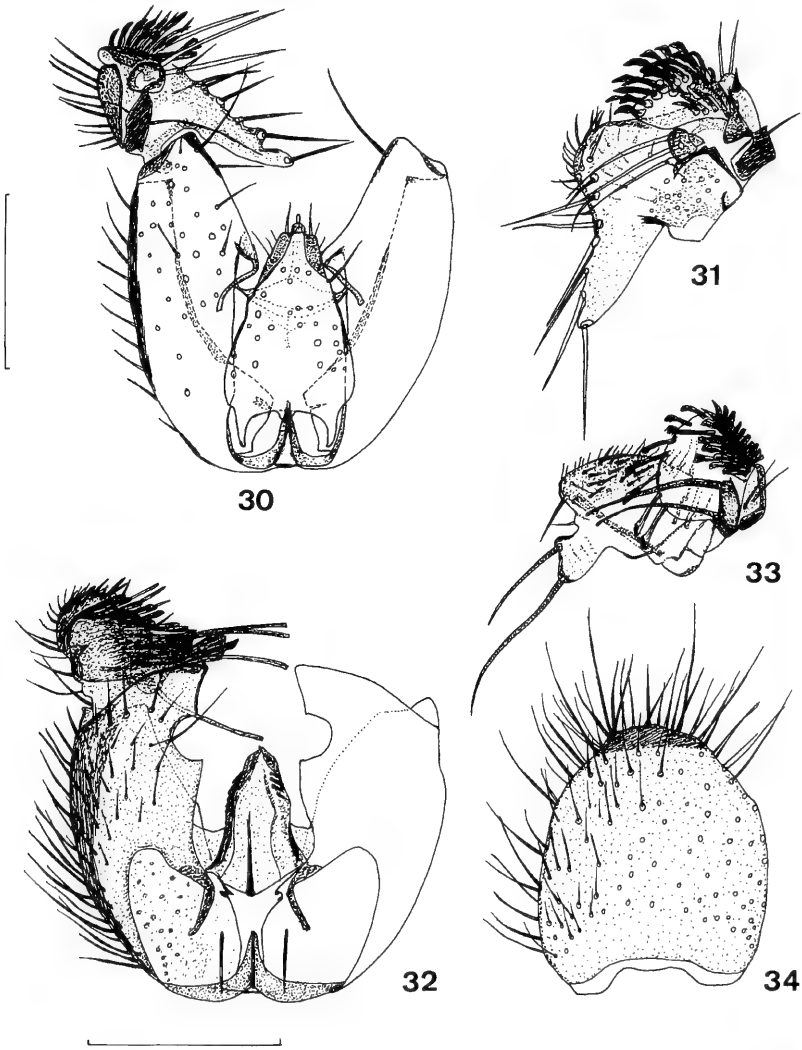
British material of *S. baltica*:

ENGLAND: *Hants*, New Forest, The Knowles, 8.vi.1986, 1 male; New Forest, Wood Crates, 8.vi.1986, 1 male; *Bucks*, Ashridge Estate, The Coombe, 17.vi.1997, 1 male (all Chandler); *Wilts*, Wilton, 4.vii.1974, 1 male (C.H. Andrewes, BMNH).

Sciophila caesarea sp. n. (Figs 30–31)

Male. A mainly shining black species, with yellow legs. Antenna longer than head and thorax together, with scape, pedicel and first two flagellomeres brownish yellow, rest brown; flagellomeres 2.5 × long as broad. Palpus brownish yellow.

Thorax shining black with pale yellowish humeral areas and prothorax brownish yellow; all setae yellow. Anepisternum with short pale setae, laterotergite with long pale setae. Scutellum with long yellow setae on disc and margin.



Figs 30–34. Male genitalia of *Sciophila* species. 30–31, *S. caesarea* sp. n.: 30, dorsal view with tergite 9 *in situ*; 31, gonostylus, internal view. 32–34, *S. baltica* Zaitzev: 32, dorsal view with tergite 9 removed; 33, gonostylus; 34, tergite 9. Scale line 0.25 mm.

Legs yellow, trochanters dark, tarsi more brownish. Hind femur dark on apical sixth. Femora with yellow hairs, tibiae with brown setulae, scattered darker setae are shorter than tibial width. Tibia 1 with 4 posteroventral setae on apical half; tibia 2 with 5 anterodorsal, 1 posterodorsal at apical third, 2 posterior setae near tip, 3 short posteroventrals on apical half; tibia 3 with 4–6 anterior, 4 anterodorsal and 4-6 dorsal setae.

Wing colourless with veins yellow; a uniform covering of microtrichia and macrotrichia over most of surface. Vein sc-r at junction with Rs, R_4 close to Rs forming small radial cell shorter than broad. Stem of median fork a little shorter than crossvein r-m. Posterior fork begins opposite level of tip of Sc. Fork veins reach margin. Costa exceeds tip of R_5 by nearly a third distance to M_1. Haltere clear yellow.

Abdomen shining black with yellow setae. Genitalia (Figs 30–31) dark brown. Tergite 9 (*in situ* in Fig. 30) is short elongate, with a blunt apex bearing a small median protuberance. Gonostylus (Fig. 31) with rounded apical and short tapered ventral lobe, bearing long marginal setae, medially with internal lobes bearing a group of long apical flattened macrochaetae.

Wing length 2.7 (holotype) −2.9 mm (paratype).

Female. Not recognised.

Holotype male, Channel Islands, JERSEY, Heatherview, St. Ouen, 15.viii.1991, A. Warne, deposited in NMS.

Paratype male, ENGLAND, *Northants*, Buckingham Thick Copse, trap A2, 9.vi.1992, A. Warne, in author's collection.

Etymology. The specific name refers to the Roman name of the island of Jersey, from which the modern name is derived, and is a noun in apposition.

Discussion. Although the two specimens were from the same collector, they were included in samples in accord with other material from the two areas so there is little likelihood of either being mislabelled.

S. *caesarea* runs to *S. nonnisilva* Hutson in the key by Hutson *et al.* (1980) except in the body not being all black. In the Holarctic fauna, its genital structure most closely resembles that of the Nearctic *S. laffooni* Zaitzev (Zaitzev, 1982a), especially in the form of the gonostylus; the gonocoxites are also similar and tergite 9 is short and tapered apically but broader.

Sciophila thoracica Staeger

Sciophila thoracica Staeger, 1840
Sciophila quadriterga Hutson, 1979, syn. n.

S. thoracica Staeger (1840) was not identified in the revision of the genus by Zaitzev (1982a), who was unable to see the type material although he noted that a Russian specimen determined as *thoracica* by Stackelberg was *quadriterga* Hutson. Edwards (1924) studied Staeger's types and mentioned that *thoracica* had a distinctive structure to the male genitalia. During a recent visit to Copenhagen (ZMUC), I found these syntypes (two males and a female) to be as described by Edwards. Both males were *S. quadriterga*; one of them, of which the genitalia had been mounted on a microscope slide, had been labelled as lectotype by Pakarinen but this has not been published. I have labelled the same specimen as lectotype, which is established here. The second male was that referred to as var. b (with thoracic stripes present) by Staeger.

Mycetophilinae

Here British distribution is summarised except for new or scarce species.

Allodia (*Allodia*) *embla* Hackman

Males can be determined from the genitalia figures in Hackman (1971). It was thought to be a boreal species and most British records (now 30 sites) are from SCOTLAND: East Ross, Nairn, Inverness-shire and WALES: Glamorgan, Radnor, Cardigan, Montgomery. Records from ENGLAND relate to Shropshire, Westmorland, Suffolk and ten wetland sites in Norfolk. The records from Wales and East Anglia result from surveys by the former NCC.

Allodia (*Allodia*) *zaitzevi* Kurina

This species was recorded from Ireland by Chandler (1987a) as *pyxidiiformis* Zaitzev, 1983. It is also common in Britain, having previously been confused with *A. ornaticollis* (Meigen). Kurina (1998) showed that the type series of *pyxidiiformis* included two species and the holotype was not the same species figured by Zaitzev (1983), which he described as *zaitzevi* to which British Isles material belongs. It has been examined from throughout Britain north to Sutherland.

Allodia (*Brachycampta*) *protenta* Laštovka & Matile

Laštovka & Matile (1974) figured the male genitalia. This was trapped in 1988 on the NCC wetland surveys at three sites in WALES: Anglesey (wet meadows) and ten sites in ENGLAND: *Norfolk*, eight sites (including reedbeds and carr woodland); *Suffolk*, Walberswick and *Cambs*, Chippenham Fen. It was also obtained in 1989 in a Malaise trap at Cromle y Veddy (SC300857), ISLE OF MAN (S.M. Crellin).

Allodia (*Brachycampta*) *westerholti* Caspers

Caspers (1980) figured the male genitalia; the name *retracta* Plassmann, 1977 was used for it for a time following Caspers & Plassmann (1986) but this has now been corrected (Caspers, 1996). The British sites are broad-leaved woodland, mainly beech (*Fagus*) on chalk or limestone:

ENGLAND: *Surrey*, Box Hill, 11.vii.1992, 1 male (Chandler); *Gloucs*, Workman's Wood NNR, 11.x.1979, 1 male (I.F.G. McLean); *Gloucs*, Chedworth, 12.x.1979, 1 male (A.E. Stubbs).

Allodiopsis korolevi Zaitzev

This was figured by Zaitzev (1982b) from Russia. The British site is a small area of mixed woodland, including conifer plantations. Remarkably *Mycetophila stricklandi* (Laffoon) (see below) was found there two days later on a visit to follow up the find of *A. korolevi*.

British material of *A. korolevi*:
ENGLAND: *North Yorks*, Boltby, Spring Wood, 17.vii.1996, 1 male (A.E. Stubbs).

Brevicornu arcticoides Caspers

The male genitalia were figured by Caspers (1985). Emley (1992) recorded it as *arcticoides* from Staffordshire, but Chandler (1998c) suggested synonymy of this with *fasciculatum* Lackschewitz (1937). However, Chandler (2000) confirmed that

arcticoides was a good species, based on the findings of Alexei Polevoi that *fasciculatum* was not conspecific. The British sites are more or less wooded.

British material of *B. arcticoides*:
ENGLAND: *Norfolk*, Sutton Broad, water traps, 21.viii–4.ix.1989, 1 male; viii.1990, 1 male (A. Foster & D. Procter); *Staffs*, Sandwell Valley, Malaise trap, vii.1988, 1 male (M.G. Bloxham).

Brevicornu glandis Laštovka & Matile

The male genitalia were figured by Laštovka & Matile (1974). This is another species added by the NCC wetland surveys and was found at 20 sites in ENGLAND: Berks, Oxon, Norfolk and WALES: Anglesey. It was also found in IRELAND in a survey of the Burren Grikes, County Clare (Chandler *et al.*, 2000).

Brevicornu intermedium (Santos Abreu)

This is a frequent species which had previously been confused with *B. fissicauda* (Lundström), which is also frequent. Zaitzev (1985) figured it as *hissaricum* Zaitzev, but this was synonymised by Chandler (1994a) and Chandler & Ribeiro (1995). Both species have sternite 8 forked apically and the gonostylus very similar. They are best separated by the sternal process between the ventral lobes of the gonocoxites, deeply bifurcate with long pointed lobes in *intermedium* but only narrowly divided into short rounded lobes in *fissicauda*. Material examined is from southern ENGLAND: Berks, Middlesex, Cornwall, Norfolk and WALES: Anglesey.

Brevicornu rosmellitum sp. n. (Figs 35–36)

Brevicornu nigrofuscum: Zaitzev, 1988, misidentification, not (Lundström, 1909)

Male. Head grey dusted. Antenna brownish yellow basally, flagellum dark.

Thorax grey dusted with yellowish decumbent setae on mesoscutum, the larger marginal and postalar setae darker; 1 pair of strong dark scutellars; 3–4 proepisternals; long yellow to brown setae on laterotergite.

Legs yellow. Tibia 2 with 7 anterior, 3 posterodorsal and 4 posterior setae. Tibia 3 with 7–8 anterodorsal, 4–5 posterodorsal and 5 posterior (on apical half) setae.

Wing clear yellowish, radial veins darker. Crossvein r-m two thirds length of stem of median fork. Posterior fork begins just basad of base of median stem.

Abdomen mainly grey dusted. Tergites 2–4 with yellow lateral patch occupying about half height of tergite. Genitalia (Figs 35–36) yellow.

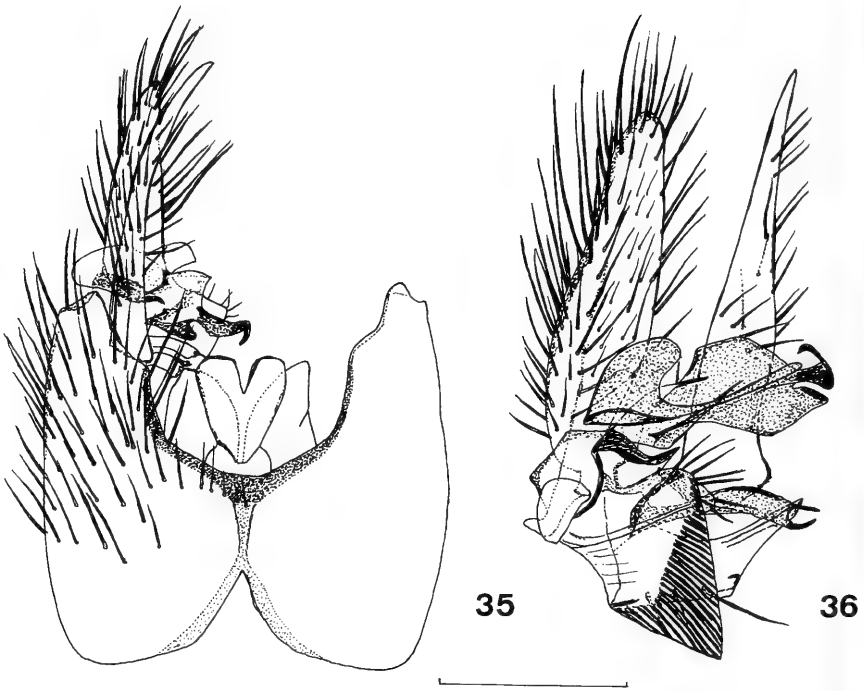
Wing length 2.4–2.6 mm.

Holotype male, ENGLAND, *Oxon*, Waterperry Wood, at honey-dew, 12.x.1968 (J. Brock, Liverpool Museum).

Paratypes: 4 males, data as holotype (J. Brock, Liverpool Museum); 1 male, ENGLAND, *Oxon*, Waterperry Common, 29.ix.1968, (J. Brock, in author's collection).

Etymology. The specific name is an adjective indicating association with honey-dew.

Discussion. Zaitzev (1988) figured this species, which he recorded from USA and Canada, and identified as *nigrofuscum*. The British species figured by Edwards (1925)



Figs 35–36. Male genitalia of *Brevicornu rosmellitum* sp. n. 35, ventral view of gonocoxites and gonostylus; 36, internal view of right gonostylus. Scale line 0.2 mm.

is, however, not conspecific but more likely to be *nigrofuscum* of Lundström (1909). Zaitzev's species has been found in Britain and is here described as new.

Exechia bicincta (Staeger)

The interpretation of this name follows Edwards (1924), who examined Staeger's types (ZMUC). These comprise two specimens, labelled respectively as male and female and the usage is based on the first of these. Edwards proposed the name *dizona* for *bicincta* sensu Lundström (1909). He evidently did not examine the "female" specimen as I have found this to be a male of *E. dizona*. Unfortunately, Staeger's description refers only to the female and his "male" must have been added later, so the *dizona* male is more likely to be the type. As this cannot be certain, I have not selected a lectotype in order to maintain current usage.

Exechia chandleri Caspers

The male genitalia were figured by Caspers (1987). It has been found at several wooded and wetland sites in southern England.

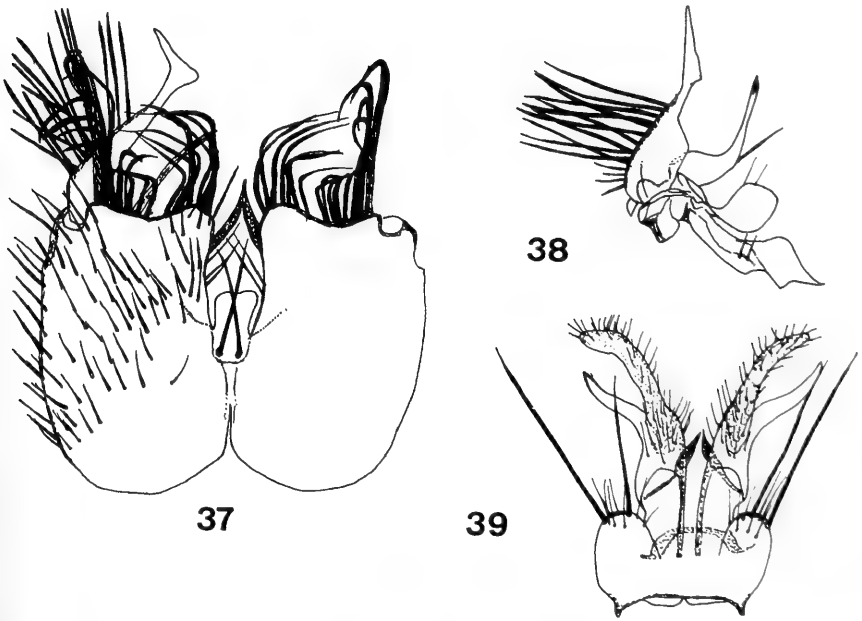
British material of *E. chandleri* (1 male at each site):

ENGLAND: *Bucks*, Burnham Beeches, Malaise trap in bog, 20.vii–2.viii.1995 (J.W. Ismay); *Oxon*, Weston Green Fen, vii–viii.1987 and Chimney Meadows Ditch, ix–x.1991 (Malaise traps, K. Porter); *Northants*, Buckingham Thick Copse, 6.ix.1991 (A. Warne); *Somerset*, Priddy Pools, 16.x.1986 (A.E. Stubbs); *Essex*, Epping Forest, Monument Field, Malaise trap, 21.viii.1998 (J. Dagley).

Exechia cincinnata Johannsen (Figs 37–39)

This species was described from North America (USA, New England) and this is the first record for the Palaearctic. Johannsen (1912) figured the male genitalia, showing the series of bent setae on the gonocoxites. The British specimen was compared with Nearctic material which I collected a few weeks previously, in broad-leaved and mixed forest. The British site is dry broad-leaved woodland dominated by beech (*Fagus*).

E. cincinnata is brightly coloured. The thorax is brownish yellow, more yellowish on the sides of the mesoscutum. The abdomen has large yellow markings: sides of tergite 1; most of 2–3, which have a narrow dark stripe medially, broadened narrowly on fore margin and as a triangular area on posterior half; 4 has a yellow lateral spot on basal half in British male, absent in Nearctic specimens (although present in Johannsen's types). The male genitalia (Figs 37–39) are yellow and very distinctive in structure: cerci strap shaped with dense short setae apically; gonostylus with 2 narrow lobes, the



Figs 37–39. Male genitalia of *Exechia cincinnata* Johannsen. 37, ventral view; 38, internal view of gonostylus; 39, tergite 9 and cerci.

outer with strong erect external setae; gonocoxites with close set bent setae on distal margins, the medial and lateral strongest. Wing length 2.6–3.0 mm.

Nearctic material examined of *E. cincinnata*:
CANADA: *Ontario*, Manitoulin, Killarney State Park, 31.viii.1994, 1 male; USA: *Michigan*, Ottawa National Forest, Sylvania Wilderness, ancient maple forest, 3.ix.1994, 2 males; USA: *Wisconsin*, Rib Mountain State Forest, 4.ix.1994, 1 male (Chandler).

British material of *E. cincinnata*:
WALES: *Denbigh*, Loggerheads Country Park, 14.x.1994, 1 male (Chandler).

Exechia cincta Winnertz

The male genitalia were figured by Dziedzicki (1915); the ovipositor was figured by Chandler (1977) from a French specimen. *E. cincta* has been found at a dozen sites scattered across southern ENGLAND: Cornwall, Devon, Hants, Berks, Surrey, Hereford, Worcs and South WALES: Cardigan.

Exechia macula nom. n.

Mycetophila maculipennis Stannius, 1831, not Say, 1824 [= *Leia winthemii* Lehmann, 1822]
Exechia maculipennis (Stannius, 1831)

As indicated by Chandler (1998c) *maculipennis* Stannius is a junior primary homonym. The replacement name proposed here is a noun in apposition (= spot, referring to the small faint median wing spot across the basal third of the median fork, absent in other British *Exechia* species). Identification of this species is based on the genitalia figures by Dziedzicki (1915).

British material of *E. macula*:
ENGLAND: *Norfolk*, Bure Marshes, Woodbastwick, water trap, 17–31.viii.1989, 1 male (A. Foster and D. Procter).

Exechia pectinivalva Stackelberg

Stackelberg (1948) figured the male genitalia. It was found at 43 sites in WALES (all vice-counties except Monmouth and Flint), mostly blanket or raised bog and valley fens, by the NCC wetland survey. There are also a few records from similar sites in ENGLAND: Shropshire and Cumbria, an old record for Crowborough, Sussex (1916) and one record from SCOTLAND: *Perthshire*, Black Wood of Rannoch (1987).

Exechia repandoides Caspers

This species is closely related to *E. repanda* Johannsen, differing most obviously in the shorter blunt outer lobe of the gonostylus. Caspers (1984) figured the male genitalia. It has been found at several scattered broad-leaved woodland and carr sites in southern ENGLAND: Oxon, Gloucs, Cambs, Norfolk and Suffolk.

Exechiopsis (*Xenexechia*) *membranacea* (Lundström)

The male genitalia were figured by Caspers (1984). It had previously been confused with the frequent *E. leptura* (Meigen) and separation of females of these species is still uncertain. *E. membranacea* has been recorded at a dozen sites, both woods and wetlands, in southern ENGLAND: Somerset, Wilts, Hants, Herts, Berks, Oxon, Bucks, Hunts and Leics.

Dynatosoma nigromaculatum Lundström

Chandler (2000) corrected the suggestion by Chandler (1998c) that this species was a synonym of *D. abdominale* (Staeger, 1840). Ševcik (in press) has shown that there are small differences in the medial part of the gonostylus between these species and *D. schachti* Plassmann (1999), which also has very similar genital structure

Dynatosoma norwegiense Zaitzev & Økland

Dynatosoma thoracicum: Landrock, 1930, not (Zetterstedt, 1838)

This species was recorded by Chandler (1994b) on specimens from Bucklebury Common, Berks. It was obvious that the figures by Landrock (1930) represented it, but did not correspond to *thoracicum* (Zetterstedt, 1838) as figured by Zaitzev (1986), whose identification was confirmed by Kallweit (1990), who examined Zetterstedt's type. Zaitzev & Økland (1994) described *norwegiense* from Norwegian material and did not mention Landrock's paper, but it is considered from comparison of British material with their figures that they are conspecific although the mesoscutum is described as yellowish brown with two indistinct dark stripes while British material has it uniformly orange brown. The synonymy of this group of the genus is, however, uncertain and the identity of three other Zetterstedt names requires clarification.

Ševcik (in press) records *norwegiense* from Slovakia and there is a male in BMNH from Austria, labelled "Hochobir, Car. Mader" (no collector or date).

British material of *D. norwegiense*:
ENGLAND: *Berks*, Bucklebury Common, 12.vii.1989, 1 male (A.E. Stubbs) and 6.vi.1993, 1 female (Chandler); *Berks*, Windsor Forest, 15.viii.1994, Malaise trap, 1 female (via J. Brock); *Herts*, Ashridge Estate, 8.vii.1999, 3 males (Chandler); *Hants*, New Forest, The Knowles, 16.vii.1995, 1 female and Denny Wood, 9.vii.1998, 1 male (I. Perry).

Mycetophila deflexa sp. n.

Mycetophila gratiosa: Chandler, 1988, misidentification, not Winnertz, 1863

Male. Head dark brown, grey dusted. Antenna brownish yellow to basal half of first flagellomere, rest brown; flagellomeres about twice as long as broad. Palpus yellowish brown.

Thorax shining dark brown with narrow yellow humeral area on each side and yellow prothoracic spiracular area. Decumbent mesoscutal and anepisternal setae yellow, stronger marginal setae including postalar, prescutellar, 2 pairs of strong scutellars and strong setae on prothorax dark brown; shorter brown setae on posterior part of anepisternum, upper margin of anepimeron and on laterotergite.

Legs yellow, with femur 3 narrowly brown apically. Tibia 2 with 3 anterior, 1 anterodorsal (beyond anterior setae), 4 dorsal, 2 short posterior (near tip) and 3 long ventral setae. Tibia 3 with 7 anterior (4th to 6th setae progressively shorter), 0 anterodorsal and 5 dorsal (without shorter interspersed setae) setae. Tibia 2 with first two rows and tibia 3 with first anterior row of setulae (adjacent to anterior setae) dark brown, the rest on 3 mainly yellowish with the second row only brown on the apical third.

Wing yellowish with two more or less strong brown markings: a spot over Rs and the base of the median fork, which is weaker and almost interrupted in cell r_5; a preapical band distal to tip of R_1, reaching tip of R_5 so filling the end of cell r_1, narrowed basad behind R_5 and extending across median fork in which it is interrupted. Radial veins except Rs strongly setose below, R with 32–36 setae below, r-m with 3–4 setae but vein tb bare beneath. Haltere yellow.

Abdomen dark brown with genitalia (figured by Chandler, 1988) yellow. Gonostylus with ventral stylomere bearing 4 strong spinose setae on its distal margin, the outermost longer and strongly bent in the middle; dorsal stylomere bluntly triangular with 2 long setae apically.

Wing length 2.4–3.0 mm.

Female. Not certainly recognised.

Holotype male, ENGLAND, *Surrey*, Chobham Common, Gracious Pond, 16.x.1984 (Chandler, deposited in NMS).

Paratypes: ENGLAND: 1 male, same data as holotype; 1 male, *Bucks*, Burnham Beeches, 13.v.1990; 1 male, *Berks*, Windsor Forest, Highstanding Hill, 27.vii.1991; 1 male, *Berks*, Dinton Pastures Country Park, Sandford Copse, 7.x.1998 (all Chandler).

Etymology. The name refers to the bent spines on the gonostylus.

Discussion. Chandler (1988) recorded this species as new to Britain under the name *gratiosa* Winnertz, 1863 and figured the male genitalia. However, according to A.I. Zaitzev (pers. comm.) he has examined specimens of both this species and of a species agreeing better with the genitalia figures by Dziedzicki (1915) with the gonostylar spines shorter and not bent, which he considers the true *gratiosa*, so the British species is here described as new.

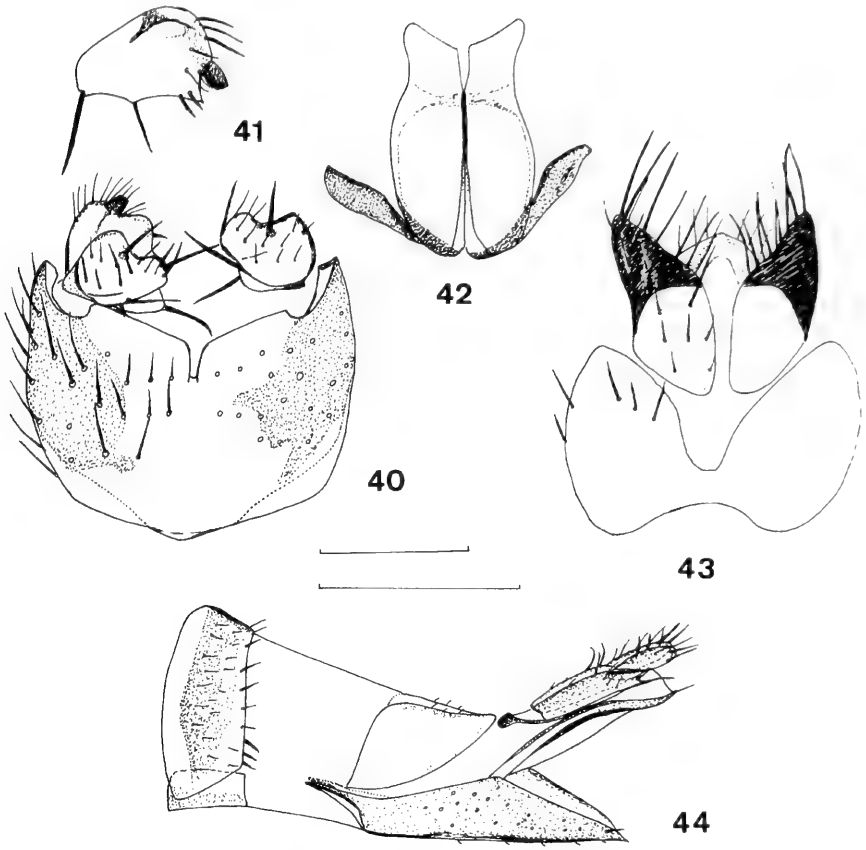
As indicated by Chandler (1988) it is close to *M. luctuosa* Meigen in most external characters, differing in the shining mesoscutum and tibia 2 with 3 ventral setae

Mycetophila eppingensis sp. n. (Figs 40–44)

Male. Head shining dark brown; clypeus grey dusted. Antenna with scape, pedicel and base of first flagellomere yellow, rest brown; flagellomeres from second onwards nearly twice as long as broad. Palpus yellow.

Thorax shining dark brown with broad yellow humeral area on each side of broad median brown stripe to fore margin and narrower yellow prescutellar patch on each side. Scutellum mainly dull yellow, brown basally. Pleura and mediotergite dark brown. Decumbent mesoscutal and anepisternal setae yellow, stronger marginal setae including postalar, prescutellar, two pairs of strong scutellars and strong setae on prothorax dark brown; short setae on laterotergite yellow, stronger darker setae on posterior margin of anepisternum and upper margin of anepimeron.

Legs yellow except dark brown apical quarter of femur 3. Tibia 2 with 3 anterior, 1 anterodorsal (beyond anterior setae), 5 dorsal, 2 short posterior (near tip) and 3 long ventral setae. Tibia 3 with 7 anterior (4th to 6th setae shorter), 0 anterodorsal, 6 dorsal (basal short, but no shorter interspersed setae) and 2 short weak posterior



Figs 40–44. Genitalia of *Mycetophila eppingensis* sp. n. 40–43, male: 40, ventral view of gonocoxites and gonostyli (only ventral stylomere of right gonostylus included); 41, dorsal stylomere of right gonostylus; 42, aedeagus; 43, tergite 9 and cerci. 44, female, lateral view. Scale line 0.1 (male), 0.2 mm (female).

(near tip) setae. Tibia 2 with first two rows and tibia 3 with first anterior row of setulae (adjacent to anterior setae) dark brown, the rest on 3 mainly yellowish but becoming dark in several rows near tip.

Wing yellow with two strong brown markings: a median spot around Rs and r-m from R_1, filling base of cell r_5 and extending into base of median fork; preapical marking distal to tip of R_1, reaching tip of R_5 and narrowed basad behind R_5, becoming fainter towards M_1 and ending just beyond it, but a small patch present on adjacent part of M_2. Radial veins except Rs strongly setose below, R with 38–40 setae below, 3–8 weaker setae below apical part of tb, similar to the weaker setae on the fork veins. Haltere yellow.

Abdomen with tergite 1 and broad band on each of tergites 2–6 dark brown, the fore and hind margins of these tergites broadly yellow, sternites yellow. Genitalia

(Figs 40–43) brownish yellow. Gonostylus (Figs 40–41): ventral stylomere with rounded distal lobe and one strong seta set in concave apical margin; dorsal stylomere short and broad with a long apical seta.

Wing length 3.0–3.1 mm.

Female. Generally similar to male. Abdomen more extensively darkened, tergites 2–6 with only apical margin yellow. Ovipositor (Fig. 44) slightly brownish, slender, with two segmented cerci. Tarsus of fore leg slightly enlarged below tarsomeres 2–3.

Wing length 3.2 mm.

Holotype male, ENGLAND, *Essex*, Epping Forest, "Wake/Sunshine" area (TQ421988), by Wake Valley Lake, 18.viii.1998 (Chandler, deposited in NMS).

Paratypes: ENGLAND: 1 male, *Essex*, Epping Forest, Great Monk Wood (TQ418983), 18.viii.1998; 1 female, *Essex*, Epping Forest, Cuckoo Pits (TQ401957), 17.viii.1998 (both D.M. Ackland, in author's collection); 1 male, *Oxon*, Spartum Fen, 15.x.1999 (Chandler); 1 male, *Hants*, Leckford, Water Garden, 11.xi.1999 (Chandler).

Discussion. The collection sites at Epping Forest were deciduous woodland dominated by beech (*Fagus sylvatica*), the other sites mixed woodland. This species belongs to group E of Laffoon (1957) and runs in his key to the Holarctic species *M. laeta* (Walker) because of presence of some setae below vein tb, but differs from *laeta* in the form of the gonostylus. *M. laeta* also has the thorax yellow with three dark stripes on the mesoscutum.

M. eppingensis is distinguished from other British species with setae below tb by these being present only near the tip of the vein and by the absence of short setae between the strong dorsal setae on tibia 3. Among species with tb bare, it agrees in chaetotactic and wing marking characters with *luctuosa* Meigen and *deflexa* sp. n.; and with the latter in thoracic colouring but differs from it in the second row of anterior setulae on tibia 3 being dark only near the tip.

The *Mycetophila signata* Meigen Group

The Palaearctic species of this group were revised by Zaitzev (1999), who figured the male genitalia. British specimens of *alea* (Laffoon), *sigillata* Dziedzicki, *signata* Meigen and *blanda* Winnertz agree with his figures, but the common British species *M. signatoides* Dziedzicki is figured as *M. assimilis* Matile, 1967 which is here regarded as synonymous with *signatoides*. It is concluded that the species figured by Zaitzev as *signatoides* is different. Zaitzev recorded both species from European Russia, but his *signatoides* more rarely.

Mycetophila stricklandi (Laffoon)

This belongs to the *signata* group and can be determined from the figures by Laffoon (1957) and Zaitzev (1999). In the mainly dark brown body coloration and other external characters it resembles *M. blanda* and since it was first recognised as British from the find at Spring Wood, Boltby, three specimens were found to have previously been misidentified as *blanda*. The Scottish record was also from a conifer plantation but the Irish specimen was from a beech (*Fagus*) wood.

According to Laffoon (1957), North American specimens often have the tergites apically or more extensively yellow, but the British specimens have the abdomen entirely dark brown. They differ from *blanda* in having only a small paler central patch on the scutellum, whereas in *blanda* the scutellum is broadly yellow medially and there is a distinct yellow prescutellar spot on the scutum; *stricklandi* also has

more dark setulae in the first anterior row on the hind tibia, these reaching nearly to the tip while *blanda* has dark setulae only in the middle part of this row.

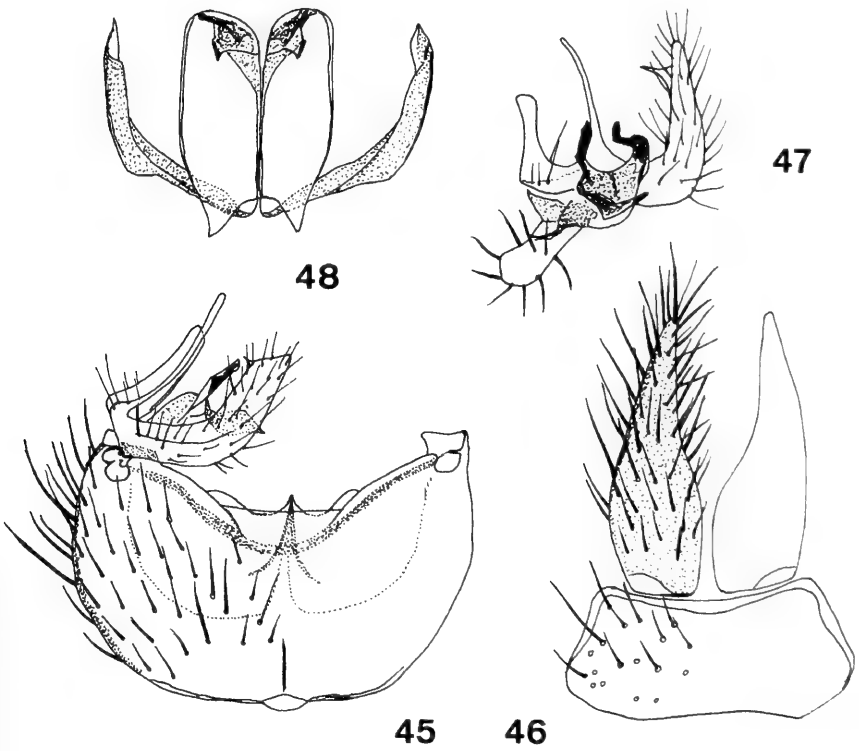
British material of *M. stricklandi*:
ENGLAND: *North Yorks*, Langthwaite, 26.vi.1981, 1 male (I.F.G. McLean) and Boltby, Spring Wood, 19.vii.1996, 1 male (Chandler). SCOTLAND: *Perthshire*, Tummel Forest, 28.v.1973, 1 male (Chandler). IRELAND: *Wicklow*, Killakee, 8.v.1988, 1 male (Chandler).

Phronia carli sp. n. (Figs 45–48)

Phronia longelamellata: Lundström, 1906, misidentification, not Strobl, 1898

Male. Head grey dusted. Antenna with scape, pedicel and first flagellomere yellow, rest of flagellum dark grey. Palpus yellow.

Thorax mainly brownish yellow, with three vague brown stripes on disc of mesoscutum, the median broadened in front and almost reaching fore margin, the



Figs 45–48. Male genitalia of *Phronia carli* sp. n. 45, ventral view of gonocoxites and gonostylus; 46, tergite 9 and cerci; 47, internal view of gonostylus; 48, aedeagus.

laterals only behind humeral area. Scutellum apically, laterotergite and mediotergite brownish. All setae brown.

Legs yellow, with apical quarter to third of hind femur and tip of hind tibia brown. Tibia 2 with 3–4 anterodorsal, 3–4 posterodorsal and 7 posterior setae. Tibia 3 with 9 anterodorsal, 13–16 posterodorsal and 6 posterior (on apical two fifths) setae.

Wing yellowish with brown costa and radial veins. Stem of median fork up to twice as long as r-m.

Abdomen with tergites 1–3 mainly yellow, 2–3 dark brown dorsally, tergite 4 with yellow lateral triangle basally, rest and tergites 5–6 dark brown. Genitalia (Figs 45–47) yellow. Cercus (Fig. 46) elongate, extending a little beyond tip of gonostylus in situ. Gonostylus with lateral portion comprising a curved strap-like ventral lobe and a narrow dorsal lobe (Figs 45, 47).

Wing length 2.7–3.2mm.

Female. Unknown.

Holotype male, SCOTLAND, *Perthshire*, Bridge of Balgie, 10.vii.1988, oak (*Quercus*) and beech (*Fagus*) woodland (Chandler, deposited in NMS).

Paratypes: SCOTLAND: 2 males, *Ross*, Easter Fearn, birch (*Betula*) woods, 11.vi.1984; 1 male, *Ross*, Beinn Eighe NNR, 10.vi.1984; 1 male, *Sutherland*, Migdale Wood, 28.v.1994; 1 male, *Sutherland*, Torboll Wood, 26.vi.1999 (Chandler); 1 male, *Argyll*, Ariundle, 10.vi.1982 (A.E. Stubbs).

Etymology. Named for Carl Lundström who first recognised this species.

Discussion. I added *P. longelamellata* Strobl to the British list (Chandler, 1992b), but this was based on the figures by Lundström (1906) of a Finnish male. Kallweit (1998) has studied Strobl's types and found that *longelamellata* is a senior synonym of *P. minuta* Landrock. Lundström (1906) identified as *longelamellata* a species with long cerci (his "upper lamellae"), which he thought agreed with Strobl's description, but in *minuta* it is the gonostyli which are elongate. Lundström did not describe his species further and it is here described as new.

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SHORT COMMUNICATION

***Ranatra linearis* (L.) (Heteroptera: Nepidae) in flight**—My numerous previous encounters with *Ranatra* had left me in no doubt that it must fly quite frequently, as I have regularly found adults in isolated, ephemeral water bodies. Clegg (1952) simply states that it 'can fly', but Chinery (1972) erroneously states that it is winged but flightless. I had long harboured a great desire to see the water stick-insect fly, as it looks such an unlikely aeronaut. At c.11.45 am on 12.v.2000, I was using a pond net to sample some small, temporary pools on Churt Flashes, Surrey (SU83). I had never seen *Ranatra* there before, despite annually dipping the ponds since 1988. With the first trawl of my net I caught a large adult. Unusually the bug adopted a sprightly stance right up on the tips of its tarsi. Just for a second I thought the impossible might happen, but it didn't, so I placed it back in the water. A minute later at the next pond my friend Dr Rob McGibbon and I were treated to the most amazing sight of a *Ranatra* (possibly the one I had just caught) on the wing. It flew at about shoulder height with the body and front legs held parallel to the ground. The middle and hind legs were outstretched downwards at 90° to the body, and the tarsi appeared to be pressed together. The abdomen showed up bright red, and at a casual glance it could easily be mistaken for a red damselfly (*Ceriagrion* or *Pyrrhosoma*), if it wasn't for the very peculiar direct and level flight, with wide slow turns. This is at odds with Joan Hardingham's observations of a *Ranatra* flying in Suffolk (Chalkley, 1996). She stated that the "body is held at 60°", but also that 'the wings are of a russetty colour like an earwig's', presumably as a result of confusing the wings (which are colourless) with the abdomen beneath.

This all too brief excursion into the air was curtailed by a headlong kamikaze dive at the pond edge ending in a half-submerged crash landing. The bug remained in this position for at least five minutes. The combination of shock and delight had left me doubled up in hysterics and my companion clearly feared for my sanity, until I explained just how privileged we were to see such a rare sight.

That this phenomenon should be observed on a fairly typical warm spring day makes it all the more surprising that it isn't witnessed more often.—JONTY DENTON, 2 Sandown Close, Alton, Hants GU34 2TG, UK

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BENHS FIELD MEETINGS

Burnham Beeches, Slough, Berkshire, 18 October 1997

Leader: **Ian Sims.**—Half a dozen members met the leader at the main car park at Burnham Beeches for this field meeting. It was an overcast and cool day but glimpses of sunshine brightened the morning session. The main objective was to search for evidence of *Phyllonorycter mespilella* (Hübn.). Mines believed to be of this species in whitebeam had been collected here the previous autumn but no adults were reared. Burnham Beeches is a large area of broadleaf woodland that is managed by the City of London Corporation. Within its bounds are isolated areas of heath where ling (*Calluna vulgaris*) is the most abundant heather species and cross-leaved heath (*Erica tetralix*) also grows. Common cow-wheat (*Melampyrum pratense*) is a widespread if sparse member of the forest ground flora. There are several lakes, drainage streams and marshy areas, but the chief entomological attraction of the site is its abundance of dead wood.

The morning was spent in the woods and heaths to the north and east of the car park. Here an example of *Nycteola revayana* (Scop.) (oak nycteoline) was put up from heather in a heathy area known as "the moat". Although an early date for collecting fungal-feeding tineids, several birch polyporus fungi (*Piptoporus betulinus*) with obvious signs of feeding by lepidopterous larvae were taken. Subsequently these yielded examples of the rare *Nemapogon variatella* (Clem.) and the common *N. cloacella* (Haw.). Other members of this family, reared in 1998 from material collection on this meeting, included *Morophaga choragella* (D. & S.) and *Triaxomera parasitella* (Hüb.), both from the fungus *Inonotus dryadeus* on beech, and *N. wolffiella* (Karsh. & Neil.) reared from *Hypoxylon multiforme* on dead birch logs. While collecting these an overwintering case of *Coleophora artemisicolella* Bru. was found. This species is not mapped for VC24 in *MBGBI*, 3.

Leaf miners were few and far between. It was not clear if we were too early or late in the season for these, but few vacated mines were seen. However, several members of our party found sufficient mines of *Stigmella tityrella* (St.) in beech (*Fagus sylvatica*) to be worth retaining some and attempting to rear them out. Those trying this were advised to take some beech leaf mould for the larvae to pupate in and this tactic proved successful. Mines of a phyllonoryctid were found in whitebeam. These matched the description of *P. mespilella*, but material reared the following spring by Dennis O'Keeffe proved they were *P. sorbi* (Frey.).

Lunch was taken at the snack bar back at the car park, where a dog rose (*Rosa canina*) was seen growing next to our table. The leaves of this plant were riddled with larvae of *Ectoedemia angulifasciella* (St.). After lunch the party moved to some ponds in woodland to the south of the car park. En route, green islands were noted in fallen leaves of aspen (*Populus tremula*). These proved to betray the presence of *E. argyropeza* (Zell.) larvae mining within the leaf petioles and just starting to feed in the base of the leaves. In the past I have found this species quite late in the year, many other stigmellids having vacated their mines by the time *argyropeza* is feeding. Hence the uncertainty as to whether the leafminer season was late or early, on account of the lack of mines for other species. It later transpired that 1997 was a poor season in this part of the country for leafmining Microlepidoptera.

On arrival at the ponds several members of the group spent some time recording aquatic invertebrates. Interesting records included: Coleoptera—several examples of

the noisy *Hygrobia hermanni*, *Acilius sulcatus*, *Helochares punctatus*, *Hyphydrus ovatus* and *Hydroporus erythrocephalus*; Hemiptera *Corixa punctata*: Diptera *Ptychoptera* (probably *minuta*) and *Tipula* (probably a *Tipulinae* sp.). The Diptera larvae were recorded from a marshy area with abundant sphagnum.

Other orders seen during the meeting included: Hemiptera *Palomena prasina* (L.), *Dolycoris baccarum* (L.) and *Elasmostethus interstinctus* (L.); Diptera *Myathropa florea* (L.), *Melanostoma scalare* (Fab.), *Cerodontha ireos* (Gour.) and *Phytomyza ilicis* Curt.; Coleoptera—*Cylindrinotus laevioctostriatus* (Goeze), *Cryptophagus lycoperdi* (Scop.) (in an unidentified species of earth-ball fungus), *Glischrochilus quadriguttatus* (Fab.) and *Epuraea unicolor* (Olivier) (both in a rotten beef-steak fungus *Fistulina hepatica* on oak) and *Cicones variegatus* (Hellwig) notable A (in a trunk of a standing de-barked tree long dead); Hymenoptera—*Fenusa dohrnii* (Tischbein), *Eriocampa ovata* (L.).

The meeting closed around 16.00-h. A total of 49 species of Lepidoptera (47 micros and 2 macros), 3 Hemiptera, 6 Diptera, 6 Coleoptera and 3 Hymenoptera were recorded. A full species list has been sent to our archivist and to those managing this woodland, to whom I extend my thanks for permission to hold this meeting.

Warburg Nature Reserve, Bix Bottom, Oxfordshire, 9 May 1998

Leader: **Ian Sims.**—This field meeting was planned as a repeat of the meeting held here at the same time in 1997. Once again, the woods around Nettlebed Common and Stoke Row were visited in the afternoon to look for the rare coleophorid *Coleophora antennariella* H.-S. At this time of year it should be looked for in flight around hairy wood-rush (*Luzula pilosa*). Just like last year, none were seen.

The meeting commenced in the car park of the Warburg Reserve. For a description of the habitat see *British Journal of Entomology and Natural History*, **11**, 52–54. Around 10 members met the leader and we set off to walk a circuit of the reserve, recording as we went. Owing to the weather, which was cool and breezy with dull spells and brief periods of sun, day-flying Lepidoptera were scarce. Many aculeate Hymenoptera and Diptera were recorded by several of our party, but unfortunately only one set of records has been forthcoming for these groups.

Species recorded on the wing by day included: Lepidoptera—*Micropterix calthella* (L.), *Pancolia leuwenhoekella* (L.) (by far the most common species of Lepidoptera seen by day) and *Epinotia subocellana* (Don.); Diptera—*Platycheirus albimanus*, *Criorhina berberina* and *Melanostoma mellinum*; Coleoptera—*Propylea 14-punctata* and *Pyrochroa serraticornis*; Hymenoptera (Aculeata)—*Formica fusca* and *Myrmica ruginodis*.

After dinner in a local public house the meeting reconvened for light trapping. Around six or seven lamps were operated at various locations on the reserve. Unfortunately the cloud cover that had been present for nearly the whole day evaporated to leave a clear cold night. Consequently, records of nocturnal Macrolepidoptera were well down on last year's meeting and no new records of these were made. One member of our party left me a note to say they had departed, as it was too cold. They had seen a total of six common noctuids and geometrids. None of the others present fared any better, despite several of us staying until dawn.

The final totals of species seen were 44 Lepidoptera (16 macros and 17 micros), three Diptera, two Hymenoptera and two Coleoptera. These are far fewer than the numbers seen at last year's meeting, on account of the poor weather this time round. Also seen were numbers of common lizards, grass snakes, slow worms, and the

unusual plant *Daphne laureola*. A full species list has been sent to our archivists and supplied to Rod D'Ayala, the warden of this superb reserve.

Nonsuch Park, Cheam, Surrey, 16 May 1998

Leaders: **David Lonsdale and Roger Hawkins.**—The palace of Henry VIII at Nonsuch is now nothing but a distant memory, but a small part of the original park remains and is managed as a public amenity by the boroughs of Sutton and Epsom. Two adjoining areas of former farmland extend the open space but have been the subject of much controversial debate and several planning applications. The future of one of them, Cherry Orchard Farm, remains unsettled, but the other, Warren Farm, has been partly developed for housing, with its greater part handed over to the Woodland Trust to be managed as a reserve for trees, wildlife and public access. They will be trying to keep most of it as open fields.

The meeting was attended by ten members of the BENHS and two visitors from the Alton Natural History Society, who soon showed themselves to be just as knowledgeable about insects as our own members. We also welcomed three adults and one child from Nonsuch Watch, a society of local residents who record the wildlife at Nonsuch and campaign to preserve these lands as a place of quiet enjoyment.

We went first to Cherry Orchard Farm, a former stock farm whose enriched soil currently supports a flora of coarse grasses and tall herbs. The junior member of the party was most interested in colourful but common insects such as the red-and-black froghopper, *Cercopis vulnerata* Illiger, the twenty-four spot ladybird, *Subcoccinella 24-punctata* (L.), and a pentatomid shieldbug, *Eurydema oleracea* (L.), which was present on horse-radish in both its cream-spotted and red-spotted forms, and these were actually mating together. The entomologists took more interest in less common insects such as the leaf-beetle *Chrysolina oricalcia* (Müller) and the weevil *Magdalis armigera* (Fourcroy) which was abundant on elms in the hedges alongside the fields, both here and at Warren Farm.

We stopped for lunch, most appropriately, at the Banqueting House, a Tudor relic which survives only as a rectangular brick wall on which we sat and ate our sandwiches. The ground inside the wall is raised and encloses several tall trees. The attraction of this site is a colony of the scarce ant *Lasius brunneus* (Latreille), discovered here by Peter Harvey in 1993. We found it nesting in two large oak trees and, perhaps surprisingly, also in a cedar, where it was tending aphids living on some overhanging ivy. The field meeting had been advertised as a hunt for both this ant and a rare four-spotted ladybird, and a tiny four-spotted coccinellid beetle was indeed beaten from the ivy overhanging the cedar. It was not, however, the species we were searching for, but *Nephus quadrimaculatus* (Herbst), a formerly-rare species that has recently become quite common on ivy. Mike Fox lingered at the Banqueting House after lunch but, far from having a siesta, he continued to sieve the leaf litter diligently in search of ants and was rewarded by finding two more uncommon species, *Leptothorax nylanderi* (Förster) and *Stenamma westwoodi* Westwood. Both were in the leaf litter beneath the oaks and the former was also found on the trunk of the cedar. Some management of this site has been proposed, but felling the mature oaks would destroy the colony of *Lasius brunneus*, while cutting the grass and generally tidying up the site could easily eliminate the other two species.

The former arable farmland of Warren Farm had developed into long grass with many flowers and a massive invasion of the Canadian goldenrod, *Solidago canadensis* L., which the Woodland Trust is attempting to control. Here Ian Menzies swept the

grassland and found the uncommon weevils *Tychius stephensi* Gyll. and *Ceuthorhynchidius barnevillei* Brisout. The latter weevil was swept from yarrow, *Achillea millefolium* L., as was the leaf-beetle *Cassida prasina* Illiger. Also on the yarrow were many chrysomelid larvae, two of which were reared out by Roger Hawkins as *Galeruca tanaceti* (L.), moulting to adult on 13 and 15 June. A dead tree in the middle of the farm was formerly a magnificent habitat for beetles, solitary wasps and nesting birds. It had been burnt out, but there David Lonsdale found the remnants of a stag beetle, *Lucanus cervus* (L.). He had previously also found the lesser stag beetle, *Dorcus parallelipipedus* (L), at the Banqueting House. Also at Warren Farm, Andrew Halstead recorded the rare beetle *Ischnomera caerulea* (L.), found previously at this site by John Owen in 1976, and the tephritid fly *Orellia falcata* (Scop.), whose larvae mine the roots and stem-bases of goatsbeard, *Tragopogon pratensis* L. Graham Collins found the hoverfly *Pipiza luteitarsis* Zett., whose larvae feed on aphids on the foliage of elms.

A remarkable feature of this field meeting was that the majority of members attending were Hymenopterists, either wholly or in part, with sawflies, bees and wasps, ants and ichneumons all being covered. The other members were principally interested in the Coleoptera. Only Graham Collins spent part of his time looking for Lepidoptera, but it is impossible to keep a good Order down and we were fascinated by a tiny moth which was visiting the flowers of germander speedwell, *Veronica chamaedrys* L.. This turned out to be an incurvariid, *Adela fibulella* (D. & S.), and the speedwell is its host-plant. A small mining bee with red-marked abdomen, *Andrena labiata* Fab., was also feeding at the speedwell flowers. The uncommon *A. tibialis* was also present, while the familiar red mason-bee *Osmia rufa* (L.) was collecting mud from puddles.

We concluded a most enjoyable and successful meeting by retiring to the Mansion House, not a ruin but a splendid building at which functions such as wedding receptions can be held in opulent surroundings. The general public can use a small tea-room on the north side, and here we sat and relaxed and discussed the day's findings.

Much of the main body of the park is grassland managed by mowing, but recently, late cutting has been introduced in some areas in order to benefit wildlife. There are many large trees, both native and exotic, and also old hedges. In a follow-up visit on 12 August, Ian Menzies found that nymphs of the coreid bug *Gonocerus acuteangulatus* (Goeze) were numerous on hawthorns in these hedges. This bug has spread outwards from its Box Hill stronghold in recent years. He also beat a specimen of the buprestid beetle *Agrilus sinuatus* (Olivier) from these hawthorns, whose appearance suggests that this species is well-established in the park.

Potteric Carr, South Yorkshire, 18 July 1998

Leader: **Ian Heppenstall**. A total of 7 Members and friends attended this afternoon and evening meeting at a Yorkshire Wildlife Trust wetland nature reserve and SSSI near Doncaster. It provided a rare opportunity for those resident in the Yorkshire area to enjoy one of the Society's Field Meetings. Limited recent fieldwork had indicated that the reserve could be of regional significance for both lepidoptera and odonata. Unfortunately, the weather, as with much of 1998, was scarcely ideal, a very stiff breeze keeping most insects well down during the afternoon, and only 5 common species of odonata were noted. Butterflies seen included comma *Polygonia c-album* (Linn.) and ringlet *Aphantopus hyperantus* (Linn.). Otherwise recording was largely restricted to searching for leaf mines of microlepidoptera. Beating was

generally unprofitable because of the strong breeze. Thankfully, the wind had dropped by evening but under clearing skies, the temperature fell to below the seasonal norm for the night's moth trapping. Three light traps were operated in the central part of the reserve.

Notwithstanding the far from ideal weather conditions, a healthy total of 105 species of Lepidoptera were recorded, either as adults or larvae, over the meeting as a whole and some 24 of these—mostly microlepidoptera—were new to the Reserve. Although largely unexceptional, they included the following locally scarce species: *Evergestis pallidata* (Hufn.), blue-bordered carpet *Plemyria rubiganata rubiginata* (D.&S.), haworth's pug *Eupithecia haworthiata* Doubl. and dingy footman *Eilema griseola* (Hb.). *Phllonorycter heegeriella* (Zell.), *Blastobasis decolorella* (Woll.), large twin-spot carpet *Xanthorhoe quadrifasiata* (Cl.), purple thorn *Selenia tetralunaria* (Hufn.) and silky wainscot *Chilodes maritimus* (Tausch.) were perhaps the more noteworthy of the remainder.

New Forest, Hampshire, 10 October 1998

Leader: **Tony Pickles.**—This field meeting was held to follow up last year's meeting which attempted to establish the range of *Agrochola haematidea* (Dup.), the southern chestnut, in the New Forest. Because this noctuid moth flies for a limited period, around dusk only, the meeting was convened for 17.00 hours and members were allocated sites which seemed likely to support the moth in the east of the Forest. In 1997 *haematidea* had been found to be present over the west of the Forest more or less wherever suitable conditions prevailed. The moth seemed to favour tall mature bell heather *Erica cinerea* L. growing in drier areas.

The weather was much better than in the previous year and nine members and friends met at Lyndhurst where a most persistent New Forest donkey tried to join the group. The bipeds later split into three parties, but only the members trapping on the higher ground just before Matley Passage were successful. One female *haematidea* came to their lights before 19.30 hours thus confirming its presence in the East of the Forest. Three unidentified, medium sized noctuids which could also have been of this species were observed making short low flights over the heather just before the onset of darkness at between 19.10 and 19.25.

Little can be deduced from one month, but it is notable that there is still no occasion on which the moth has been seen in numbers in the New Forest, although this seems to be frequently the case in Sussex. The bell heather in the east is predominantly not tall and mature, but is mostly present on edges of larger tracts of *Calluna* and as no more than ten per cent of the whole. It would seem encouraging that the moth can survive in areas that do not comply very closely with its preferred habitat. I would like to thank those members who attended the meeting and the Forestry Commission for their assistance.

Homefield Wood, Medmenham, Buckinghamshire, 11 October 1998

Leader: **Ian Sims.**—Despite a rainy start to the day, by the time of the meeting the weather had cleared and the day was sunny, warm and calm: ideal conditions for searching for leaf-mining Microlepidoptera, the main quarry for this meeting so late in the season. Unfortunately, perhaps due to the inclement weather earlier in the day, no one apart from the leader attended this meeting. Not perturbed, I spent an hour or two recording before returning home. Homefield Wood is a nature reserve on the Chilterns managed by the Berkshire, Buckinghamshire and Oxfordshire Naturalists

Trust (BBONT). It consists of a large complex of woods, mostly pine and beech, with forest rides and areas of chalk downland.

The first thing I encountered, while waiting to see if anyone was going to show up, was a full-grown larva of *Abraxas sylvata* (Scop.) (clouded magpie) descending on a silken thread from wych elms (*Ulmus glabra*) at the car park. In fact, it landed on my head! Searching the wych elms revealed many more larvae of this species in various stages of growth. Also seen on these trees were mines and larvae of *Bucculatrix albedinella* Zell., and mines of *Stigmella marginicolella* (Stt.) and *S. ulmivora* (Fol.).

Along the border of a path through the woods plants of wood avens (*Geum urbanum*) were being mined by *S. aurella* (Fab.)/*gei* (Wocke). The taxonomic status of these moths is still, I believe, uncertain. Another interesting stigmellid, *S. aeneofasciella* (H.-S.) was found mining leaves of agrimony (*Agrimonia eupatoria*) in a small area of chalk dowland, along with *Fomoria septembrella* (Stt.) in perforate St John's wort (*Hypericum perforatum*). In a damp area of woodland *Ectoedemia arcuatella* (H-S.) was found in wild strawberry (*Fragaria vesca*). One of the few oaks (*Quercus robur*) in this complex of woods contained *E. albifasciella* (Hein.) along with *S. atricapitella* (Haw.) and *Tischeria ekebladella* (Bjerk.). *Bedellia somnulentella* (Zell.) was abundant in field bindweed (*Convolvulus arvensis*) growing along most of the borders of many woodland rides, early instar larvae of *Stephensia brunnichella* (L.) were abundant in wild basil (*Clinopodium vulgare*) while vacated feeding sites of *Parornix fagivora* (Frey) were found on several of the large beeches (*Fagus sylvatica*). Several species of phyllonoryctids were seen, the best was probably *Phyllonorycter lantanella* (Sch.). Larvae were found in leaves of the wayfaring-tree (*Viburnum lantana*), but only in plants that had been cut back to ground level during management of the chalk downland and had subsequently regrown a little. Cases of *Coleophora artemisicolella* Bru. were frequent on seeds of mugwort (*Artemisia vulgaris*). This species is not mapped for VC 24 in *MBGBI*, **3**.

A total of 7 species of Macrolepidoptera and 76 micros were recorded in various stages, not bad for a relatively poor leafminer year. A full species list has been sent to our archivists and supplied to BBONT, to whom I extend my thanks for permission to hold this meeting.

Wye Valley Woodlands, Gloucestershire, 8 May 1999

Leader: **Roger Gaunt.**—This meeting was planned to do some recording in an area of semi-natural broad-leaved woodland that has scarce hook-tip *Sabra harpagula* (Esp.) and *Salebriopsis albicilla* (H.-S.) later in the season, but in which there has been no previous recording at this time of the year.

Unfortunately weather conditions were such that only a limited amount of recording took place. Gavin Boyd travelled all the way from Northampton for the morning meeting to be the only visiting member. Before heavy rain curtailed activities, Gavin recorded just one bee, *Nomada flava* (Panzer), and in addition a handful of moths of no special interest were knocked up.

In view of the conditions it did not seem likely that anyone would turn up in the evening; however Norman Binsted set out from Romsey in dry weather and having travelled all that way was undeterred by the rain, now light, that continued to fall. His MV light, stationed at Shorn Cliff, attracted 28 species of moth. By far the most common was orange footman *Eilema sororcula* (Hufn.) (Notable Nb.). Also recorded was a speciality of these woods, pauper pug *Euphithecia egenaria* (H.-S.) (RDB3).

and little thorn *Cepphis advenaria* (Hüb.), which has started coming to light in recent years.

A new record for VC34 was made when an unfamiliar tortrix taken as a voucher specimen turned out to be *Metendothenia* (formerly *Hedya*) *atropunctana* (Zett.). Bradley *et al.* do not list this moth for Gloucestershire but there appears to have been a record from Stroud (VC33) in 1917 (Metcalfe, 1917. *The Entomologist*, **50**, 274).

A full species list was prepared and has been forwarded to Forest Enterprise, who gave permission for the meeting to be held, and to BENHS for their archives.

Loch Con (NN6967; alt. 1500 ft), Perthshire, 29–30 May 1999

Leader: **Keith Bland.**— On 29 May even by Scottish standards, the weather was somewhat inclement. Persistent light to heavy rain throughout the day until 15.00 hr proved sufficient to deter all but the leader. In the afternoon the showers became lighter and more intermittent and gave way to a fine overcast evening spoilt only by a stiff breeze. In addition, the high water level in the loch prevented access to the islands where some of the most interesting vegetation occurs. Then, to cap everything, as darkness fell and the MV-lamp was lit, the sky cleared and out popped the most magnificently clear full-moon. Very quickly the temperature plummeted and everywhere became white with a heavy frost.

Of the early species only *Argyrotaenia ljungiana* (Thun.) (=*pulchellana* Haw.) was encountered, although a cocoon with exuvium of *Phragmatobia fuliginosa* (L.) indicated that this species was also on the wing. Several *Ematurga atomaria* (L.) and *Neofaculta ericetella* (Geyer) had already emerged. A single pupa of the latter was also found which emerged a few days later. An exposed bank supporting *Genista anglica* and *Arctostaphylos uva-ursi* amongst its vegetation yielded *Ancylis myrtillana* (Treitschke) and several well-marked *Ancylis unguicella* (L.). Unfortunately no larvae could be found on the *Genista* or the *Arctostaphylos*. However, the cowberry sported many mines of *Ectoedemia weaveri* (Staint.) and many blistermines of *Phyllonorycter junoniella* (Zell.). The bilberry patches were well stocked with larvae but predominantly those of the geometrids *Hydriomena furcata* (Thun.) and *Operophtera brumata* (L.) with only a few young larvae of a tortricid, probably *Rhopobota naevana* (Hübn.). The large quantity of old cocoons that had weathered out of the peat suggested that last year had been a bumper year for the northern eggar, *Lasiocampa quercus callunae* Palmer, in this area. A lunch-time retreat into the fisherman's bothy revealed only the corpses of a few *Hofmannophila pseudospretella* (Stainton). Considering the weather and the altitude this list of a mere twelve species of Lepidoptera is not unrespectable. The MV-light failed to raise even a kamikaze gnat!

The Diptera were even less in evidence than the Lepidoptera. Besides the occasional specimens of the ubiquitous *Scathophaga stercoraria* (L.), the impressive larvae of *Pedicia rivosa* (L.) were present in the wet flushes and the larvae of *Scaptomyza graminum* were found mining the leaves of *Stellaria uliginosa*.

The highlight of the day was however on the ornithological front when a first year male red-breasted merganser (*Mergus serrator*) spent some twenty minutes casually feeding within 10 yards of the parked car. Several common gulls (*Larus canus*) were on eggs around the loch and several common scoter (*Melanitta nigra*) were busy feeding further out on the open water.

Great Torrington woodlands, Devon, 26 June 1999

Leader: **Roy McCormick.**- The weather forecast looked decidedly bad, with rain and thunder promised but it was decided to 'give it a go' with various people, who were interested, being told over the phone that we would be at the prearranged spot at 20.30. I arrived with Peter Franghiadi to find several people had already turned up and the weather was reasonable with slight drizzle and hardly any wind; we were hoping for cloud cover because it was the night before a full moon. We were a dozen altogether with a mixture of Devon Moth Group, BENHS, Butterfly Conservation and Devon Wildlife Trust members; we had one Devonshire Association member and one person with a general interest who left before the night got underway, probably put off by the proposed late finish. We discussed where everybody was to go, with Barry Henwood, Harry Wooltorton, Darren Willetts and Bill Deakins deciding to stay in the track where we had assembled; Peter Franghiadi and I had already planned to go to the next block of woodland owned by Clinton Devon Estates; a four-wheel drive was needed to get to this area. Adrian Henderson put a couple of traps in his own block of woodland just up the road. In all, eleven traps were put out in the three areas.

Peter and I and a couple of DMG members went on to our spot, set up the equipment and put out the wine ropes; by the time we had this finished it was time to go back to the main site to see what had come in. The weather was still holding with the temperature around 15–17 °C; it kept trying to rain but thankfully it did not. The list started to build with one or two good species among the commoner moths. After we had checked out the traps in the main track we returned to our own equipment (Adrian was doing his own check on his traps, reporting back to me later). On the way back my Land Rover had a front wheel puncture in the rutted track leading to our site; a frantic wheel change was carried out, the people with me helping out as best they could; this was around 23.20 and the only lights we had were a torch and a lantern—lucky that the track had a stony base. When we eventually got back to our site and started to look at the traps, the first *Moma alpium* (scarce merveille-du-jour) had already turned up; this was around 23.45 and it was a fresh female. The list had increased considerably by the time we had finished looking at our lights but no more *M. alpium* yet so we piled back into the Land Rover and returned to the main track to see how things were progressing. Barry Henwood had taken the rare tortrix *Celypha aurofasciana* (Haw.) and *Phlyctaenia stachydalis* (Germ.) had turned up at two of the sites, Bill Deakins had his first *M. alpium* and several other good species had come in. Harry was having trouble with his generator so was not doing very well; I found out later that his car had broken down so Harry definitely did not have a good night. The time was around 01.15 and we decided to take our leave so we said our good nights and went back to our site to pack up; at around 01.30 we started to pack up and two more male *M. alpium* were found; the list by this time was around 100 species but there was nothing on the wine ropes. As we packed up the rain started, gentle at first but increasing and by the time we had finished around 02.00 it was raining lightly; this got worse as we drove home. I think we finished just in time. The final list came to 120 species.

The more interesting species were *Pandemis cinnamomeana* (Treit.); *Celypha aurofasciana* (Haw.); *Eudonia delunella* (Staint.); *Phlyctaenia stachydalis* (Germ.); *Euphyia unangulata* (Haw.) (sharp-angled carpet); *Chloroclystis debiliata* (Hüb.) (bilberry pug); *Hydrelia sylvata* (D. & S.) (waved carpet); *Macaria liturata* (Clerck) (tawny-barred angle) & (probably) f. *nigrofulvata*; *Cleorodes lichenaria* (Hufn.) (brussels lace); *Aetheria bicolorata* (Hufn.) (broad-barred white); *Moma alpium*

(Osb.) (scarce merveille-du-jour); and *Laspeyria flexula* (D. & S.) (beautiful hook-tip). The best catch of the night was not identified until Sunday. A *Heterogenea asella* (D. & S.) (triangle) was taken with permission from Bill Deakins' trap by Barry Henwood who did not immediately recognise it but on examination on Sunday he identified it as this species. He brought it round to me and I confirmed the identification. There are only two records from the Plymouth and Plymbridge areas from over 100 years ago.

Newton Abbot Racecourse, Devon, 9 July 1999

Leader: **Roy McCormick**.—The evening was dry and cloudy with a temperature that held at around 14°C, and it looked as though the Racecourse event could be good for a change; the site has never been very productive but it has produced some good finds. Bernard Barnett, John Muggleton and I arrived to find Mr and Mrs Brown (Devon Moth Group Members) and a Butterfly Conservation Member, Mrs D Dicker and daughter waiting for us; another DMG Member had gone to the wrong place and missed the event.

We made our way to the trapping site and set up my equipment of four traps and did a bit of dusking while waiting for darkness to fall; nothing of note was seen before I started up the generator and once the lights were operating moths started to trickle in slowly. We did one round of the traps with nothing of note seen and Mrs Dicker and daughter decided that they had seen some moths and it was time for them to leave. I think they enjoyed the short stay and saw moths they had never seen before.

On the next round we had elephant hawk and jersey tiger plus a few of the larger moths and felt that it was a shame that Mrs Dicker did not stay that little bit longer. The list crept up as more visits to the traps were made but we had decided that this was not going to be a late night because we had an Exhibition (The Creepy Crawly Show) to go to the following morning. Around 23.30 I set up the 'Robinson' trap and small generator (this was firmly chained to an open barn) and we set about bringing the other equipment in. This trap was started up before we left at around midnight, and was left running until it ran out of fuel; this was collected in the morning prior to the Exhibition. Specimens for this event are collected to be shown live in a cage at the Exhibition and are released after the show; this display creates a great deal of interest with the people who attend the event.

The more interesting of the species seen were one *Calamotropha paludella* (Hüb.) taken outside the 'Robinson'; two *Catoptria falsella* (D. & S.); two *Cleorodes lichenaria* (Hufn.) (brussels lace); one *Thumatha senex* (Hüb.) (round-winged muslin); one *Euplagia quadripunctaria* (Poda) (jersey tiger); one *Callimorpha dominula* (L.) (scarlet tiger); two *Lacanobia suasa* (D. & S.) (dog's tooth) and four *Apamea ophiogramma* (Esp.) (double lobed).

Sloden Inclosure and Ladycross, New Forest, Hampshire, 14 August 1999

Leader: **Paul Waring**.—The main aim of this meeting was to see if we could find the dark crimson underwing moth *Catocala sponsa* (L.) in the tract of mature oak woodland in Sloden Inclosure in the north of the New Forest, near Fritham. Since 1995 the Society has held field meetings annually in the New Forest to investigate the status of this species and other rare insects, continuing a long history of visits by the BENHS to this exceptional area. The meeting in 1995 confirmed the presence of both the dark and light crimson underwings *C. sponsa* and *C. promissa* (D. & S.) at five

separate localities on the east side of the Forest and the light crimson underwing at a sixth (Waring, 1996a & b). In 1996 we were investigating various heaths and bogs near Sway when a light crimson underwing came to light in open ground at Goatspen Plain (SU2301), the nearest oak woodlands being the Inclosures of Wilverley, Holmsley and Brownhill in the south-west of the Forest (Waring, 1997). Our meeting in 1997 was held in October to investigate the status of the southern chestnut moth *Agrochola haematidea* Dup. in the western part of the Forest (Cook & Pickles, 1998), with another meeting in October 1998 to extend our coverage for this species (Pickles, 2000). We also returned to survey the crimson underwings in 1998, breaking new ground by exploring Anses Wood, south of Fritham. We had no luck here, but it was a cold night, though we recorded a couple of *promissa* and *sponsa* the same night at the site in Whitley Wood where we had both in 1995 (D. Green, in prep.).

Sloden Inclosure is just northwest of Anses Wood and only 2km south of Coopers Hill, where Ron Louch recorded several light crimson underwings at wine-ropes and light on 27 July 1997, so we were hopeful of a positive result. In the event the weather was against us again this year and we did not see any crimson underwings at Sloden, nor during simultaneous trapping and wine-roping at the usual site at Ladycross where up to 15 *promissa* were being recorded per night at the end of July 1999. Here is how the sessions progressed.

The afternoon session was attended by David Burrows from Sussex, Bryan and Trina Formstone from North Wales, Frank Lowe from Wiltshire and Rachel Thomas and I. We met up at Furzey Lodge (SU366025) and after recording the grayling butterfly *Hipparchia semele* (L.) on the open heath in sunshine, we drove through a heavy rain shower to examine the heathland of Fritham Plain (SU225135) before investigating the oak woodland on the south side of Sloden Inclosure (SU216125) and selecting our trapping sites there for the evening. In the woodland at Broomhill (SU260144), we spotted many flame orange brackets of the sulphur-yellow polypore fungus *Polyporus sulphureus* growing on a dead old oak trunk which had lost its canopy. On closer inspection we found a scattering of frass over some of the brackets and wondered if these were of the waved black moth *Parascotia fuliginaria* (L.) but we couldn't see any larvae. Some of the frass pellets were large and mouldy and the larvae should have moved off to pupate by this stage of the summer. The fungi made a striking sight however.

The weather was blustery and cloudy with occasional sunshine as we walked over Fritham Plain. We flushed singletons of the chevron *Eulithis testata* (L.) and the double-striped pug *Gymnoscelis rufifasciata* (Haw.) and a couple of graylings. Insects were not flying and a common lizard *Lacerta vivipara* L. we found was distinctly sluggish. The only caterpillar we saw was a final-instar larva of the broom moth *Ceramica pisi* (L.). We adjourned for dinner to the Coach and Horses pub in Cadnam, which has the advantage that it serves good hot food all day. The party then returned to Sloden while Rachel and I went to Ladycross to meet the evening arrivals: Graham Dennis from Pamber Forest and Mark and Elizabeth Trasenster from London. Others expected had clearly been put off by the bad weather and poor forecast. Tawny owls *Strix aluco* (L.) were already vocal by the time we had set up four light traps and ten wine-ropes at Ladycross in the corridor of old oaks, some of which have dark patches on the trunks from previous sugaring sessions. By 21.00hrs a copper underwing *Amphipyra pyramidea* (L.) was already visiting an old sugar patch and several other copper underwings and Svensson's copper underwings *A. berbera svenssoni* Fletcher came to our wine-ropes, along with a couple of large yellow underwings *Noctua pronuba* L.. Likewise at Sloden Inclosure.

There had been a brief shower just before dusk and although it was fine thereafter, it was clear, breezy and cold, with a dusk temperature of 14°C falling to a night minimum of 12°C. We were in touch with the folks at Sloden by mobile phone and the results were similar at both sites. None of us saw any crimson underwings. In the first half hour after dusk all we had seen at Ladycross were a couple of flame shoulder *Ochropleura plecta* (L.) and an angle shades *Phlogophora meticulosa* (L.). Then a few black arches *Lymantria monacha* (L.) and maiden's blush *Cyclophora punctaria* (L.) began to come in from the oaks and one or two common noctuid moths from the damp grassland under the trees, such as the small wainscot *Photedes pygmina* (Haw.) and the straw dot *Rivula sericealis* (Scop.). By this stage the copper underwings on the wine-ropes had almost all left and no other moths had come to replace them. By 23.00hrs we were virtually certain that the crimson underwings were not going to appear this night and members reluctantly began packing up their gear, resolved to try again on a warmer night another year. A bat began patrolling over our lights and caught some of the few moths which were arriving. Rachel and I settled down in our tent for the night and ran one Robinson trap all night. The total catch at dawn was only 36 macro-moths of 14 species, including 3 peacock moths *Semiothisa notata* (L.). David Burrows stayed the night at Sloden with his MV light and three others were operated until late. This group also sugared eleven oak trees and used several wine-ropes. The most noteworthy of the captures at Sloden were two narrow-winged pugs *Eupithecia nanata angusta* Prout from the heath, a yellow-barred brindle *Acasis viretata* (Hübn.) and a bordered beauty *Epione repandaria* (Hufn.), in addition to eleven maiden's blush and 15 black arches, including one female.

It was a glorious sunny morning at Ladycross as we packed up our gear and had breakfast, with green woodpeckers *Picus viridis* (L.) and a nuthatch *Sitta europaea* (L.) calling from this handsome cathedral of ancient oaks. The Forest had withheld her crimson underwings from us on this occasion but we were more than happy enjoying the scenery of this beautiful place. We shall have to hold another BENHS meeting in the north of the Forest for the dark crimson underwing another year.

Later in the morning, in hot sun on nearby heathland at Roydon Common, before returning to Peterborough, we encountered over a dozen silver Y moths *Autographa gamma* (L.) flying about amongst the heather, several rush veneer moths *Nomophila noctuella* (D. & S.) and a fresh red admiral *Vanessa atalanta* (L.), suggesting that the squally weather of the previous day had brought with it some migrants from the south.

I would like to thank Dave Green for making the advance arrangements for this meeting, the Forestry Commission for permission to hold it and the hardy souls who joined us despite the unfavourable weather forecast. Copies of this report and the species lists have been forwarded to the Forestry Commission and the BENHS archivists.

References

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OBITUARY

Brian Robert Baker

Brian Baker died suddenly, but peacefully, on the 13th February 2000, a tragedy for his family and a sad loss to British entomology to which Brian had given so much throughout his life.

Born on the 13th July 1924, Brian was a resident of Reading in Berkshire and there was probably nobody who knew better the highways and byways, the woods, reed beds and the chalk downs of this varied and interesting county. Brian would recall how he learnt much of his field craft knowledge from Conrad Runge and other local entomologists during his teenage years, knowledge which he was to pass on so willingly to others in the years that followed.

In 1942, Brian joined the Royal Air Force and spent part of his service in the Far East, in the immediate post-war period. There he no doubt studied the local flora and fauna but it was the British Lepidoptera which was to be his main lifetime interest. On leaving the RAF Brian joined the staff at Reading Museum & Art Gallery, becoming their deputy director in 1956. Whilst at the museum he studied at Birkbeck College, University of London, and obtained a degree in Natural Science in 1956. In the following year he became a Fellow of the Royal Entomological Society and in 1963 he was awarded a Fellowship of the Museums Association. Brian retired in 1987 but this did not see the end of his association with the museum which he continued to visit frequently, and to take a great interest in its long renovation and the housing and display of the important collections that it contains.

Brian joined the British Entomological & Natural History Society in 1952 and regularly attended their meetings and annual exhibitions during the years that followed. He was elected President of the Society in 1983. Brian was also a long-standing member of the Reading & District Natural History Society which he joined in 1936, at the tender age of twelve, and of which he remained an active and influential member for the rest of his life. Brian was twice President of that society, including during their centenary year, besides being their entomological recorder for many years, indoor meetings secretary and regular supporter of the annual "mothing night" when he would introduce botanists, coleopterists and those with a general interest in natural history to the delights of seeing and recording moths in one of his favourite localities. In all his associations with these societies it is so apparent that Brian was more than willing to give his time and energy back to an interest from which he clearly gained so much personal satisfaction during his life.

In 1977 Brian started collecting together the records of the Lepidoptera of Berkshire which were eventually to be published as *The Butterflies and Moths of Berkshire* in 1994. Not for Brian the dubious pleasures of the word processor, he laboured long and hard on this project using a card index and typewriter to produce the text for the first comprehensive county list since *The Victoria County History of Berkshire* of 1906. Each record was carefully checked for accuracy and to ensure that it properly fell within the boundaries of vice-county 22. Brian was an acknowledged expert on the *Sesiidae* (clearwing moths) and it was no surprise when he was asked to write a chapter of *The Moths and Butterflies of Great Britain and Ireland*, describing the life histories of these fascinating moths.

Brian was a founder member of the Berkshire, Buckinghamshire and Oxfordshire Naturalists Trust (BBONT). In these days, when such county organisations are an accepted part of the conservation scene, it is perhaps difficult to appreciate that they

were once tender shoots which could so easily have withered away. From 1960 to 1970, during this formative period, Brian was the Berkshire Secretary to the Trust. It was through his efforts and gentle personality, and the generosity of a local landowner, that the lovely Moor Copse Reserve was bequeathed to BBONT and I can think of no better memorial to Brian's name and memory than this particular event.

Brian had a long association with Pamber Forest where he collected or studied insects over many years. How well he approved of the management plans recently introduced to bring this area back to its former glory. He would recall many of his trips to this area but I often heard him say, rather sadly, that it was a pity it wasn't in Berkshire as he couldn't use the records in his book! The last time that I saw Brian in Pamber Forest he was sugaring the same oak trees from which he had recorded *Catocala promissa* (light crimson underwing) many years ago, anxious to know if this magnificent moth was still present in the forest.

The notes above detail just some of Brian's achievements but many lepidopterists today will have other, more personal, memories of this remarkable man. I first met Brian in 1984 when I moved to Reading from Derbyshire, and I was immediately impressed not only by his knowledge but by the friendly and enthusiastic manner in which he introduced me to some of the many interesting sites around Reading. At the Woolhampton reed beds he proudly showed me the old bunker in which he spent many nights whilst surveying the moths of the area during one busy season. He teased post-hibernation larvae of *Diachrysia chryson* (scarce burnished brass) from rank vegetation like a conjurer producing rabbits from a hat, and showed me how to find freshly emerged *Hydraecia petasitis* (butterbur) clinging to the underside of leaves along the river bank. He was always much more interested in hearing about other people's captures or records than telling about his own. He actively encouraged an interest in all aspects of natural history in all he met and showed so much patience when explaining things to people with much less knowledge and experience than himself.

His study at his lovely home in Caversham was an Aladdin's cave of treasures for all those with an interest in butterflies and moths. Cabinets, breeding cages, setting boards, books, paintings, spent matches and pipe cleaners filled the room and it would have taken a full week of careful study to have done justice to his collection. Each insect in his collection seemed to tell a story of a particular field trip, a success in the breeding cage or his memories of finding the larva after many hours of patient field work.

Brian will be remembered with affection and respect by all who knew him, and with gratitude by those whom he helped and inspired. Our sincere sympathy is extended to Heather, to Mark and Anne and all members of his family.

DAVID YOUNG

BRITISH ENTOMOLOGICAL AND NATURAL HISTORY SOCIETY PUBLICATIONS

A field guide to the smaller British Lepidoptera—edited by A. M. Emmet.
2nd edition, 1988, 288 pages.
Paperback £18.00 (plus £1.60 p.&p.) (members £12.00 + £1.60 p.&p.). Case bound £22.50 (plus £2.00 p.&p.) (members £15.00 + £2.00 p.&p.).

This book is packed with information about the life histories of almost all the 1500 species of micro-lepidoptera recorded from the British Isles. An index of foodplants refers the reader to all spp. known to feed on each particular plant; this makes possible the speedy identification of larvae found (or at least narrows the field to a small number of spp.).

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A key to female *Neocnemodon* (which could not be identified before)
A further bibliography of about 300 references. Over 100 line figures.

New British beetles: species not in Joy's practical handbook—by P. J. Hodge and R. A. Jones
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There are over 650 British beetles not included in Norman Joy's *Practical handbook of British beetles*. Some of these are new arrivals from the continent or further afield; others have been confused or overlooked. Many groups have undergone revision and spp. have been 'split'. Joy omitted many rare or doubtfully indigenous spp. Several of these have recently increased or been confirmed as certainly occurring (or having once occurred) in Britain. Many modern keys have been published since Joy's book, but these are often scattered through (sometimes obscure) journals.

New British beetles puts these changes into perspective and offers a new look at the changes that have taken place in the 63 years since Joy's publication. The most up-to-date and useful keyworks are listed, together with other helpful and interesting references. or each 'new' species, a short description and comparison with other related spp. is followed by journal and book references through which identification can be made and confirmed.

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